OUTLINES OF

FARM MANAGEMENT

MADRAS

AND THE

ORGANIZATION OF FARM LABOUR

TREATING OF

THE GENERAL WORK OF THE FARM; FIELD AND LIVE STOCK; DETAILS OF CONTRACT WORK; SPECIALITIES OF LABOUR; ECONOMICAL MANAGEMENT OF THE FARMHOUSE AND COTTAGE AND THEIR DOMESTIC ANIMALS ETC. ETC.

BY

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WITH NUMEROUS ILLUSTRATIONS

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PREFACE.

THE present volume is designed to be the last of that series of works which, under the specific title of "Outlines," concerns itself with the various departments of "Modern Farming." The volumes which have preceded this embrace within the scope of their respective subjects all the departments of practical and scientific farming. These are treated in as full a manner as the scheme of the series admitted of; and although in one sense "Outlines" only, still they are sufficiently detailed to serve as practically useful guides to the ordinary work of every-day farming practice.

Notwithstanding this completeness, the scheme upon which the contents of the various volumes was based admitted of several subjects being only briefly referred to. In some instances, however, even this was not done. Although this in no way interfered with the completeness and practical utility of the matter given in each volume, still it was felt that their usefulness would be greatly increased if matter supplementary to the various divisions were given in a separate volume, so as to take up the consideration of those subjects only.

While the preceding volumes, which make up the present series of "Outlines" of the various departments of farming, are devoted to details connected with the work, either in field or fold, they do not take up the agents, either personal or mechanical, by whom and by which that work is done, nor do they concern themselves with various details affecting the economy and the value of the work. The present volume, therefore, takes up all the points connected with the farmer and the labourer, considers how they can and do affect the character of the work done on the farm, and how their efficiency is promoted or otherwise by the force of circumstances, and the possession, or the contrary, of education. In carrying this object out, we have endeavoured, as briefly as may be, to glance, on the one hand, at the relationship of the farmer himself to his farm, and how he influences its success or otherwise, to those he employs, and to the various agencies he makes use of; and, on the other hand, at the labourer and the relation he occupies to his employer, as well as to the work he has to do, and all the points connected with his position on the farm.

Following upon these sections are others taking up the details of the labour of the farm, including the various classes of work done in the fields, such as draining, ditching, digging, and the general work of cultivation of crops and their harvesting; next, the work done in the field or in the buildings connected with the cattle or live stock generally; while on all these points estimates are given of the amount of work capable of being done within a given time, and of its average cost.

Closely connected with, and greatly influencing the economy of the farm, is that of the farmhouse and the

cottage of the labourer. Under the first of these subjects the question of domestic service is discussed, with its important elements of wages, engagement, and the general management of the servants. Following upon these, the subject of provisions, their purchase and storing away, is fully discussed; while practical hints are thrown out as to their judicious distribution and economical management.

Feeling convinced that the duties which the labourer owes to his employer are best performed when he is careful to fulfil those which he owes to himself and his family, we endeavour to show in what they consist. We discuss, therefore, pretty fully the various points connected with his home, the wise and economical management of all its departments, and the many ways in which he can add to his income, as by the raising of garden produce and the keeping of various animals. To aid him in the management of the latter, brief sections are given, treating of the best way of making the most of the garden, of the management of the pig, poultry, pigeons, the goat, and the rabbit, while one is devoted to the important subject of bees.

Such may be taken as the contents of this work, which will, it is hoped, form an appropriate and useful conclusion to the present series of works on farming and farm management.

OAK LEA, NEAR STOCKPORT,
March, 1880.

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OUTLINES
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DIVISION I.
FIELD WORK OF THE FARM.

CHAPTER I.

INTRODUCTORY REMARKS—GENERAL PRINCIPLES AFFECTING SUCCESSFUL WORK IN FARMING.

IN discussing various questions of the day, one hears arguments in support of economy brought forward which are much more frequently enforced by the old saying, "Take care of the pence, the pounds will take care of themselves," than by the corresponding saw, "Take care of the minutes, the hours will take care of themselves." Yet of the two, when placed, as they sometimes are, in juxtaposition, it may be fairly doubted whether, in the popular mind, the latter is not almost wholly lost sight of in the greater importance which is attached to pence and pounds than to minutes and hours. But the latter, though thus occupying a subordinate position in popular estimation, is really of primary importance; for assuredly, if time

is economized, and not even in its minute portions wasted, it will go hard indeed if it does not follow as a natural result that money is "saved," and that, as we all know, is equivalent to money "gained." Of course we presuppose that the time is devoted to some useful purpose which will yield profit in one way or another, and not frittered away, as is too frequently the case in modern life, in "laborious idleness."

Holding this view, and imitating the practice adopted in some farms of hanging up in conspicuous positions short, pithy sayings conveying, even to the least educated minds, useful lessons and salutary warnings, we should be inclined strongly to recommend a prominent place to be given to the second of the old proverbs above quoted, namely, that which advises the workmen of the farm to "look regularly after the minutes." For certainly it will be difficult to name any industrial calling in which the value of prompt dispatch of work, and careful saving of even the smallest portion of time, are more remarkably exemplified than in that of farming in all departments. And as we have given one or two of those saws of our forefathers, who, however much despised nowadays, displayed nevertheless much practical wisdom in many of their doings, which often found expression in these same proverbs, we shall give another in support of our last statement, which tells us that, like the sailor, the farmer also requires "to keep his weather-eye open," both metaphorically and literally, if he desires to be successful in his business.

We say, if he desires to be successful. And yet when we consider the actual circumstances of farming as carried on in some districts, it scarcely seems an exaggeration to say that many do not deserve, as they apparently do not desire, to succeed, so careless are

they to secure the one and manifest the other by the exercise of all the prudence, the economy of time and money, and the thousand and one ways which we see men of other callings adopting and carrying out with such painstaking care, "giving no sleep to their eyes, nor slumber to their eyelids," in the emphatic language of the oldest and the best of all books. That a farmer who is careless and indifferent in minor things should not be thoroughly successful, is matter of little surprise; the wonder would be if, with this habit, he succeeded at all. But, on the other hand, it certainly gives rise to curious conjectures when we find that failure should be the result to many who, far from being careless and indifferent in the conduct of their business, are the very reverse of all this, are industrious to a degree, are at their work from "early morn till dewy eve," and see also, by careful supervision, that their men are industrious, and do their work well.

The question, then, arises, What are the causes which lead to success in farming considered as a general business? The answer to this opens up, however, so many and such varied points, that large space would have to be given to its discussion. We can, therefore, only glance in a general way at one or two of its leading features.

At the outset it may be necessary to observe that the most striking instances of non-success in farming are not met with amongst that class who through a long and uninterrupted succession have been connected with and brought up to farming from their earliest days, and gradually, and to them almost imperceptibly, imbued with a "liking" for farming, so that intuitively, as it were, they have derived a knowledge of its practice, although, so far as the theories on which

it is based are concerned, they may know marvellously little.

It may then be safely affirmed as a general rule that those farmers whose career is ultimately marked with success more or less decided, belong to two classes essentially different in characteristics from the one just referred to. The members of the second of these classes are what is called "thoroughly well educated as farmers," looking upon their profession as demanding as careful a preliminary training and schooling as that of any other of the many professions to which the attention of what are known as the well-to-do classes is directed. If they lack the thorough grounding in practical details which the descendants of a long line of farming men have, they, on the other hand, surpass these in their knowledge of what may be called the outcome of scientific agricultural investigation.

To these two classes of men who devote themselves systematically to farming, and who may be looked upon as those from whom success in their application to its practice may be reasonably anticipated, there remains to be added a third class with characteristics totally different from either. This class is made up of those who have been connected for the greater part of their working lives with professions or callings wholly distinct from farming, and who, having made money, have acquired a taste, or suppose they have, for farming. This taste, in many cases, springs from a sentimental source—from that love of the country, with its life and pursuits, which seems inherent in our people. This, with nearly all of them, has formed the day-dream of the period to which we have referred, a dream which they cherished in the hope that they would some day or other see it realised.

Each of these three classes has its own characteristics. The first, as we have already remarked, consists of men having a thorough knowledge of farming practice, supplemented, as it now frequently is, by a fair scientific education. The second holds a middle place, having more of what may be called the scholastic element than the practical; while the third, as may be anticipated from what we have said, possesses no thorough acquaintance, as a rule, either with what constitutes established practice or sound scientific knowledge, save what may have been picked up by intercourse with farmers possessed of both, or derived from the study of books treating on the subject. And yet even in this class instances of men who, while they lack nothing in the way of a strict and methodical attention to the business of their farms, are not pecuniarily successful in their management, are but too frequently met with.

It is, then, scarcely to be wondered at, taking everything into account, that examples of failure in farming are much more frequent in the third class than in the second, and in the second than in the first, amongst the members of which instances of thorough non-success are comparatively seldom to be met with. But even amongst these they are found, as if to keep up the truth of the saying that "there is no rule without an exception." It is understood, of course, that we are considering normal or average times of farming, not those exceptional ones which of late years we have passed through, and from which, as we write, we are still suffering—times which are adverse to success in pursuits wholly distinct from farming rules and scientific farming knowledge.

Having thus introduced the subject of success and

non-success in farming, we are prepared to state briefly a few of the leading causes of the latter. In doing so we shall follow somewhat closely the plan we adopted in an article contributed to the pages of *The Country*.

As bearing on the third class, who devote themselves to farming in the later stages of their lives, often from mere whim or for the gratification of a hobby, we may remark that this is popularly believed to be a business carried on in the easiest possible way, so easily, indeed, that success is considered certain. That this is the case may be seen from the number who take up farming without any previous training to it, as if an apprenticeship, so to call it, was in no way required. Nor is this popular belief less evident from the manner in which the whole bearings of the art and science of farming — for it is both of these — are treated and discussed in the popular literature of the day. Ephemeral as it is in one sense, it is rendered anything but this in another, from the persistent way in which discussions and statements are repeated, till at last they are but too generally believed as conveying a true and thoroughly accurate account of the position of farming as actually practised amongst us. Hence many—and these belong to, or rather make up, the third class we have named—are induced to rush into its practice; but finding that it is not quite the El Dorado of wealth they were taught to imagine, or that it did not yield the *dolce far niente* style of living amid rural scenes and work they had so often dreamt of, they have been as eager to abandon it; and this so rapidly and heedlessly as not to give themselves even what chances there might have been of making the best of a bad bargain, and recouping a part at least of their losses. We have known men

elonging to this class who, misled in the first instance y the influence we have named, have had at all events he prudence, on finding themselves in a false position, o go to work in such a business-like leisurely way s to afford them a chance of getting well out of it. he result has been that they have so worked matters hat, by selling their stock and implements and letting heir land, which in the neighbourhood of a large town s easily done, they have realised an amount which onsiderably lightened their loss. Of course to this lass may belong, as in practice is the case, rich and vell-to-do gentlemen who farm wholly for pleasure, ot profit, and are generally therefore indifferent as to ny loss they may sustain. Such require only to be oticed, from the circumstance that the main influence hey exert upon agriculture is, that their indifference o, or independence of, pecuniary results has a tendency to raise rents of farms of moderate or small creage to almost fancy prices, which of course is so far to the detriment of those who farm to live, or at least farm not to lose. This tendency is more decidedly observable in the neighbourhood of large towns, as the wealthy amateurs generally are connected with business therein, which necessitates their being within easy railway or driving distance from their country box.

In considering these facts one need not marvel at members of the third class so frequently failing. The wonder would rather be if they succeeded; but when we look at the number of those of the first and second classes who ought to succeed and do not, a grave reason must exist for it. This reason is not far to seek; it is simply want of management. It arises from a lack of the knowledge of marshalling the forces, so to say, at their command, and of arranging the different de-

tachments of these so that ultimate success will be certain. In other words, failure, more or less decided as the case may be, arises through want of the practical knowledge of the principle of working the various departments of the farm as one harmonious whole. Thus one man may be pre-eminently skilful in one department, while a second may be equally successful in the management of another; or, as Mr. R. O. Pringle, the well-known and able writer on agriculture, puts it, and his words are worth recording, "The great advantage to be derived from adopting a regular system in agriculture is, that each work should be distinct and separate, so that one could not interrupt or interfere with another. By due arrangement it is evident that labour can be so applied as not to be in the least degree wasted or lost, by two or three going across each other to do what ought to be done in its regular time by one. . . . . There is scarcely one farmer in five hundred who can estimate the loss sustained from a want of attention, and from carelessness in trifling matters." Words these of weighty import.

That the loss sustained by some farmers from inattention to small things is very great, is beyond a doubt; and we all know that the constant action of small sources of loss amounts in time to such an important aggregate, that failure is the inevitable result. We need not quote proverbs in support of this, although the number of these is suggestive of the hold which the truths they convey have taken on the popular mind. And much as farmers are beholden to those writers who have made known the great principles of the science of agriculture, not less are they so to those who have taken up the less ambitious part of urging attention to carefulness in the smallest things pertaining to its

practice both in the field and the fold. Thus, for example, there are members of the two classes now under consideration who, having been impressed with the great advantages to be derived from drainage, go to considerable expense to have it thoroughly well done; but neglecting the after processes of carefully working, cropping, and manuring the soil, they sustain losses which deprive them of half, or at least a great proportion of the benefits which drainage thus supplemented would give them. Drainage alone is comparatively worthless; it is like putting down a steam-engine, and then allowing it to stand still, for lack of preparing or having in readiness the work it has to do, or the fuel to keep it in operation. Again, there are those who have such a belief in the value of manure, that, in order to collect it, they not only go to great expenditure in money, but so employ their men and horses that they cannot work other departments properly in which they are required. Much of the manure, therefore, they find to be comparatively useless. Further, there are those so wedded to the virtues of deep and good cultivation of the soil, that they neglect the manurial department, or find they have not the means of making it good, so that their labour is in a great part lost; forgetting also that there are some cases in which over-ploughing is a loss, and likewise that there is a difference between deep culture and deep stirring of the soil. (See one of the volumes of this series, "Outlines of Modern Farming.") We fear, however, that the case of looking carefully after the manure is of frequent occurrence, however much that of neglect in working the soil and cropping it carefully and well may in time become so; for in truth there is nothing which entails so much loss as neglect of the manurial

department of the farm. We might in this way name the whole departments of farming—as, for example, the purchase of expensive stock, and the neglect of their proper feeding, housing, and general management; or the ambition of having a large farm, without duly proportioning the force of men and horses, and what is more, not having proper capital wherewith to work it; or the mania of buying the most varied and expensive collection of implements and machines, without considering whether they are fitted for the peculiar style of farming adopted, or whether there is land enough to make their employment profitable; or the still more foolish practice, an instance of which we now have in our mind, of erecting buildings so ample that they would serve a farm of twice the extent, or of stocking it so lavishly that there is not sufficient land to feed the animals on. If extreme cases, such as those we have named, are not often met with, they are, however, much more prevalent than some wot of.

The principle here exemplified runs through every department, namely, the due proportioning of one part to the other, that each shall assist the other in its development to the utmost extent, and all working together to bring about the attainment of the maximum of results with the minimum of expenditure in time, labour, and cash. He who can so manage his farm-working as that a proper balance of what may be called the opposite ends of the various levers shall be maintained, is as sure of success as he who neglects it, and, giving undue prominence to the work of one, overlcoks that of another department, is of failure. We see, therefore, that while much may be gained from the experience of others, still, unless individual

thought is given to all the details, but little real progress will be effected in making the farm in all its departments a satisfactorily managed, and therefore a paying concern.

What is wanted, in brief, is mind, or, as one puts it, "Matter is all very well, but *mind* is the true directing power." That, however, some think quite differently is clear enough, for, as we have elsewhere observed, there are those who imagine that a farm can be thoroughly managed with but a small modicum of mental effort devoted to it. Now it is hard to say how this stupid and most dangerous opinion has come to have such weight, and to be so largely and widely believed in. But so it is, and being so, we attribute to its existence much of the "slowness" which at one period characterized the calling, if it does not still do so to a considerable extent, and many of the failures that are daily happening around us. It is possible also that this lamentable state of the farming profession may have arisen from its having so long kept aloof from the influence of science, and in consequence of having been chiefly conducted by a class or race of men who, whatever their other habits were, certainly did not possess any great desire to avail themselves of such aids as the science of the day afforded them. True, science was in practical results for a long time extremely meagre; indeed it may be said that only yesterday did it begin to show its powers, and give evidence of what it really could do for farming. But now a change as striking in its general features as it is marvellous in its results has been brought about, and the consequence is that, if farming is to become the paying business which it ought to and can be, the aids of science must be brought to bear upon

all its details. To do this requires the exercise of mind.

It would be difficult to name any business or calling in which intellect is of such practical money value as in that of farming, and in which, therefore, its judicious exercise is so imperatively demanded. There is scarcely one of the many sciences which the genius of the day has so developed but what may be applied more or less directly to farming in one or other of its numerous details; and he will most excel and do best who skilfully brings their resources to bear upon it. Take, for example, the science of physiology as applicable to the animals of the farm. There is enough in connection with this to engross the attention and develop the best energies of the farmer. Applied judiciously, discoveries will yet, we believe, be made which will place the art of selecting, breeding, and rearing of farm stock as far in advance of what it now is, as that is in advance of a time little more, if not less, than a quarter of a century ago. The truth is, that much as we have lately learned, we know little yet of the animals we rear and sell, and of what they are capable, compared with what we should do were the principles of the science to which we have alluded applied to the different details of practice.

Take, further, the science of chemistry. Of this it may be said that we know, or presume to know, more than of any other of the sciences yet applied to farming; but here, again, it is but little more than the mere truth to say, that much of what we do know only serves to show how much we have yet to learn, and how much more it can be made serviceable in the practice of farming.

We might enumerate all the sciences with the same

result. Only when the farmer applies to his department the same elements of success, and the same high exercise of mind which the man of science has evinced in his, will farming show its greatest powers. This *combination* of the study of the one with the *practical* knowledge of the other, in both cases applied with equal vigour and earnestness, will alone show what farming can and will do by placing it in the first rank of truly scientific callings. How vast are its true resources we have now but little conception, having as yet but touched as it were the outer edge or fringe, while the fabric itself, in all its wide expanse, remains not only unexplored, but in very truth unknown to us.

How all this is to be brought about it scarcely lies within our province to point out. It is easy enough to see what is wanting, but quite another thing to show how the want is to be supplied. We cannot, however, be far wrong in saying that this great essential to the success of the farming of the future, the true success we have foreshadowed, will never be realised until "mind" amongst the classes engaged in practical farming, employers and employed alike, takes as high and important a place as "matter" has hitherto occupied. How this may be done, and in what directions progress will be developed in furthering and promoting the management of farming economy, using this latter term in its highest and widest acceptation, we have to some extent shown in the preceding hints; others, and they are no less important, may now be briefly glanced at. They are not presented here for the consideration of the farmer as in any way exhaustive; they will serve the purpose if they even but in a slight degree show him the importance of points too often overlooked, and further suggest to him others to which he may direct

his attention. They are in part addressed to the young farmer as indicative of what his education should be; but they are obviously more or less applicable even to those who have for a longer or shorter period practised agriculture. Of course the remarks do not trench upon the practical details of farming, which obviously come within the domain of works such as those in the series* of which this forms a volume.

The first point, then, to which we direct attention is a careful *cultivation and application of the habit of observation.* We have in other places alluded to this, but its importance is such as to justify the following remarks. The book of Nature, so to say, is open at all times for the communication of much that will be of vast service to the farmer in his daily work, if he will only look out for the lessons which it is ever ready to yield in richest abundance to the patient observer. The farmer should be perpetually on the look-out for the hints his own fields will copiously supply. But they must be looked for, and that carefully, and with discriminating observation. Many a competency has been obtained from the discovery of a new process, or a new plant or machine, the first hint of which was derived from taking note of something so trifling and obscure that it had escaped the notice of all preceding, till the man came who, seeing, took the hint which led him on to fortune. There is not a branch of our various industries and sciences but affords exemplications of this. Some men may be said never to take a walk but they see something that they turn to useful account. The hints received and facts noted may not prove useful just at the

* As, for example, "Outlines of Modern Farming," five volumes; "Suburban Farming;" and "The Complete Grazier."

time, but they will at some future period; hence the necessity, while cultivating the habit of observation, of laying them, as it were, in due order within the memory, so that they may be ready to hand when the opportunity arrives for making them useful. With this habit of observation, and possessing also the faculty of remembering what he sees, the farmer, on entering his field or going amongst his herds or flocks, will be surprised to find what a vast store of information he will soon become master of, which may be turned to many practical uses, tending more and more to the economical and thorough farming of his land, and to the paying properties of his live stock.

But while a vast deal may be obtained from the study of the book of Nature, as here suggested, the young farmer must not overlook the importance of a careful *study of works devoted to agriculture.* He should never forget that a perpetual outlook for every recorded improvement and aid is calculated to be of great service to him in his work. It does not follow, as some suppose, that such improvements are dependent for their value on being new; indeed, the very opposite is often the case, for many a most valuable hint may be obtained from old and now utterly neglected sources. In looking over, for example, old works on agriculture, or the back numbers of the *Transactions* of our agricultural societies—such as the South and West of England, the oldest of them all—one is surprised at the quantity of exceedingly valuable suggestive hints and facts to be found in their pages. Indeed, so far as cropping the farm is concerned, the consultation of such works will force upon the reader the truth of the saying of the wise man of old, that "there is nothing new under the sun." So also with regard

to the management of cattle and of pasture fields. Of course the reader must not expect to find in those old works anything concerning the recent discoveries in agricultural chemistry and the labours of our farming engineers and mechanics; but there will be many a good hint respecting the use and management of old-fashioned manures, especially the oldest and best of them all, farmyard dung. While, however, pointing to the value of old works on farming, the reader must not for a moment suppose that we are neglectful of new ones.

It will be but a poor foundation for the future success of the young farmer entering on business to rest upon if he becomes imbued with the prejudice which so many hold against what is called, by way of reproach, "book farming." Of course it by no means follows that the farmer is to be guided by the precepts of books alone; he will be foolish indeed if he be so; but we suppose him to be a man of judgment, and if so he will take care to see that the point he has to consider is to apply what he reads to his own particular situation; and it will be a poor book which does not give a suggestion or hint of some value, even if it only shows what he should *not do.*

But while the habit of observing and noting the lessons which surrounding objects are so well calculated to convey, as well as the careful study of various works, is a point of importance scarcely capable of being overvalued, the farmer should not fail to cultivate and exercise the *habit of forethought,* so as to be prepared for all circumstances dependent upon or arising out of his daily work. It is impossible to overrate the importance to the farmer of being able to "project himself into the future," so as to be ready to

meet all business wants and emergencies. It is a point little thought of by some, the neglect of which leads, however, to very serious losses in business. We have known many cases where, in point of fact, the neglect of this principle was the cause of ultimate ruin. Thus some are so careless in providing various materials, &c., which they must know will be sure to be wanted, that they keep putting off attention to them from day to day, till at last the period does arrive when the articles which are required are not even ordered. It is easy to conceive the losses arising from such a system as this. Its results are bad enough in any business, though in some there may be a chance of making up for the loss. But in many of the departments of farming a lost opportunity cannot be regained in that particular season; hence the imperative importance of looking forward. A great help, moreover, in having things done at the right time and in the right way is for the farmer himself to attend to at least the important departments. Many things may be delegated to others, but some must be the personal work of the farmer. It does not follow that we are here recommending him to do the labour of the farm; this would be as unnecessary as it would be impolitic, and, indeed, impossible to a great extent. What we insist upon is that he shall take care that he has a thorough knowledge of all the coming wants of the farm, so that those of each season and each department shall be provided for in due course as required. As to the actual working out of the details intrusted to the various hands, what is demanded of him is, that he shall, as much as possible, be continually on the move, and carefully observing all that is going on. The mere knowledge that the master may turn

up at a given point at any moment will keep the labourers on the alert and attending to their work. Not that we should advocate anything like an approach to what has been called the "slave-driving system:" far from that; but the work of the farm can be done, and done thoroughly, in a kindly, hearty, pleasant way, and yet both parties—master and labourer—be steadily pursuing the work of their respective departments. In going from field to field, and in walking quietly amongst his stock, the habit of observation, already dwelt upon, will be found of great practical value. By means of it he will at once see what is wanted at any one part of the farm, or what is out of order and likely to be the cause of loss or untoward accidents in another. In brief, the work carried on thus will be found to be well done at exactly the proper time, and therefore at the most economical rate.

The habit of observation on which we have so earnestly insisted, to be practically useful, must be *close and searching.* The very nature of the work to be done on a farm demands this. A new variety of a plant, for example, or any of those peculiarities or fine shades of difference in animals which eminent breeders know so well the importance of noting, evidently demand the closest observation, so that the plant or animals may be brought to a high state of perfection, and new "varieties and points" introduced. This, at first, will no doubt require the exercise of great care and patience; but it is a fortunate circumstance connected with the habit, that training makes it easier and easier the longer it is exercised, so that a glance of the eye will in time suffice to convey to the mind a fact or circumstance which formerly would

have taken a long time to discover, and perhaps longer still to be able readily to record in the memory. So also with the last-named faculty, the longer it is exercised the more perfect it becomes, and the more easy its further improvement. Some deny that the memory can be cultivated; but the denial is based upon false assumption. We have known individuals who might at one time be said to have had no memory at all; but, becoming alive to its importance, have set to work zealously to cultivate it, and have succeeded wonderfully. A good memory, then, is of vast importance to the farmer. But while he can gather from his own fields a large amount of information practically useful to him in his calling, this may and can be largely added to by noting at every opportunity *the practice of various localities* different from his own.

We have already said that the young farmer should cultivate the habit of looking out for hints and information from every, even the most unlikely, quarter. Thus, on entering upon a new occupation, perhaps in a part of the country situated at a distance from that he previously held, he may, like some, be disposed to introduce new lights into what he considers to be a somewhat benighted locality as regards agricultural knowledge. But before deciding upon introducing new points of practice, it would be well for him to take a quiet and observing survey of the locality, and the peculiar methods of working adopted therein. Nor will he be the less wise in his own interests if he be not above asking for information from, or listening to the opinions of men whom he may be disposed to consider "old fogies." Such long residents in the locality may be looked upon as the living registers of its practice, whose records may be read with profit.

It should be remembered that a practice which suits one locality may be wholly unsuited to another; and examples are not unfrequently to be met with of farmers going from one locality to another, and hastily introducing systems which they thought superior to those of the new districts, being glad as hastily to get rid of them, and to fall back upon the once derided practices of their new occupations. Innovations are said to be the birth of time, and if they are desirable they should be gradually introduced. To paraphrase an old saying, it is a bad thing when a farmer has to introduce a new system in haste, and finds he has to repent at leisure. One of the secrets of success in farming is to find out, by patient investigation, observation, and inquiry, what system will best suit his soil, locality, and climate, and then apply the knowledge to working out that system thoroughly. In doing this the hints we have given above on various points will be of material assistance. While keeping his eyes open, his ears must not be closed. A trivial remark made at the market dinner-table may convey to a man of quick parts what is in reality a secret of great value to him. Hence the importance of attending regularly Farmers' Clubs and Agricultural Society Meetings.

The last, but not the least point to which we would direct the attention of the farmer entering business is, that he must not despise the day of small things, or, in other words, display an *indifference to little things*. This advice may be said to be a corollary proceeding from what we have already remarked on other points; but as it is of great importance to attend to it, we deem it right to give it a special place here. Young men sometimes act on similar principles,

though perhaps in a different way or degree, to juvenile gardeners, who expect the seed sown to-day to be a plant to-morrow; but they should remember that improvement in any work does not go on *per saltum*, or by a single bound: it is a matter of slow progress. This is specially true in the science and practice of agriculture, than which there is none that tests the patience so much; for the experiment of one season will not show its effects till another, and the results not being always as anticipated, patience is still further exercised. In the department of cattle breeding alone years of patient care and observation have been given by eminent men before they could establish a breed which made their reputation. And as regards little things, despised as they too often are, but slight consideration on the part of the farmer is required to show their value. The science—for science it is—of cattle breeding, for instance, just alluded to, depends upon the observation of the most minute points of difference between one animal and another, without attention to which the selection necessary to secure ultimate perfection could not be made. To what a fine point this observation is carried may be learned from the statement made by one of the most successful breeders of the age—successful both from a scientific and a pecuniary point of view—that although engaged continually during a long life with cattle, he never went amongst his stock without discovering and learning something new. And yet if a man could be said to have exhausted the capabilities of improvement in cattle, that was the man. All the points we have dwelt upon may be regarded by some as the mere *finesse* of farm management; but in reality they are not so. These, and such as these, constitute the very essentials

of success; for it is not merely what a man knows that gives him the key to success, but how to apply what he does know to his practice.

Finally, success in farming must not and should not be measured by a pecuniary standard alone, nor will it be so by a man of thought, and one who looks to something higher than the mere accumulation of money. There is enough in the sights and signs around us to make us give earnest heed as to whether, both nationally and individually, we have not been making too much of the power of money. Right and useful in its place, and beyond all question worthy to be aimed at, money, nevertheless, is not the "be all and end all" of man's existence; and if any one has sufficient reason for rising above all this, surely it ought to be the farmer, coming as he does into the closest of contact with the wonderful works of the Creator. While, therefore, aiming at the legitimate increase of gains from his calling, the farmer of higher aspirations must look to other things as making up the sum of his success. The benefits he can bestow upon his fellow-creatures by careful exercise of his skill must not be lost sight of, while the success to be derived from this will prove the legitimate source of mental pleasure to himself. Nor should the enjoyment derivable from a contemplation of the ever-changing and always lovely works of Nature with which he is surrounded be lost sight of in summing up the success of farming. "The appearance," says a pleasant writer, "of flocks and herds of fine animals by the side of grassy meadows and growing crops, waving harvests, and flourishing orchards—why should not the enjoyment which these things always afford to the lover of Nature be regarded as an important item in reckoning with the farm?"

But while we have, for the reasons already related, refrained from entering into matters which are strictly connected with the practical details of farming, there is one point which we cannot pass over, not merely because it is not treated of in any of the volumes of this series of agricultural works, but because it is one which has a direct and most important bearing on what contributes to success in farming, and it is the

Keeping of Accounts regularly and systematically.— This, which is an essential part of the "economy" of all other classes of business, does not usually hold so prominent a place in that of farming. Why this is so, it is somewhat difficult to account for. Assuredly a farmer has as cogent reasons for knowing his exact position in business as does a manufacturer or a tradesman. That all manufacturers or tradesmen keep books systematically arranged and regularly posted up is unfortunately not the case, as the records of our Bankruptcy Courts but too often and too painfully prove. But these form the exceptions, and the estimation in which the neglect is held shows that it is pretty generally looked upon as an evidence that their affairs have been conducted in such a way and from such motives as can scarcely be called complimentary either to their business habits or to their prudence and probity. Honest business men, who to our credit form the general portion of this class of the community, being themselves singularly careful to keep documents showing their position, are scarcely to be blamed if they look upon those who do not act in a similar manner as neglecting to do what they ought for a purpose to which they would scarcely like to give the proper name.

No one who knows the farmers as a body, and the

high-strained notions of rectitude which they maintain, will attribute to them a motive of this wretched and debasing kind. But it is well that those who are careless in the matter of accounts should consider that if their public failure takes place, remarks will be made on them as pungent and painful as on those of other classes who are equally careless in this matter. Enough in all verity is laid to the blame of farmers by the general public to induce them so to act as not to give an additional cause, and, unlike many other charges, a true one, of complaint against them. This, however, is but a minor consideration compared with the most important of all, that it is for their own best business welfare to keep accounts.

Those who neglect this cannot, at all events, say that they are not sufficiently acquainted with "figures," as they are called, to be able to devise a system of accounts; nor, having done so, to "keep" them regularly. Not only has almost every—we think we might say every—work on agriculture given examples of a "set of books" or accounts, but several special works are published on the subject. Without exception these are all good, so that the farmer may at once proceed to adopt them in his practice. At the same time, as the circumstances of farming vary so much according to locality, &c., it is not easy, if indeed it be possible, to devise a "set of accounts" which, being applicable to all cases, might be termed "model." Hence, when the farmer can do so, he will perhaps best serve his purpose by devising a system adapted to the peculiarities of his own fancy, or he may purchase one of the published sets alluded to, and alter the forms to meet his own requirements.

In whatever way, however, the farmer becomes pos-

sessed of a set of accounts properly arranged for his own purposes, we cannot too forcibly impress upon him the vital importance of "keeping" them regularly. This is not merely a duty he owes to himself and to society, but he will find the habit a natural help in carrying out his work, especially if he has one "set" devoted to recording the facts of his work, as, for example, the method he adopts from time to time of feeding stock. Regularly kept books are to a man of business what charts and log-books are to the sailor. Ready for reference at all times, the accounts tell the position at any one period; and if regularly posted up, as they ought to be, they afford this information when often urgently demanded, telling him how he stands at the "now." Apart from other considerations, we would urge upon those who at present do not keep accounts, as being as they think unnecessary, their regular keeping simply as affording a source of mental ease. We have known those who for many a weary month have gone through the painful experience of knowing, or thinking they knew, that all was going to the bad, and indeed arrived at the worst, and that matters with them were hopeless. Yet they only fancied that they knew, and it was not until their affairs had been gone thoroughly into that they discovered that their fears had been groundless, and that they had been punishing themselves for a phantom. To some this incident may appear but a very trivial one; but he has lived an easy life indeed who has not had bitter experience of the truth that trifles of this sort are the hardest to bear; that it is not the work, but the worry of a man's daily life which kills. The peculiar worry here alluded to would at all events be saved by keeping a statement of their affairs in

such a way that they may be able to know their actual position. We need say little as to the help which good book-keeping is to the farmer in the carrying on of his daily business. By it he can tell what his work costs him, and thus be able to say whether he is paying too dear for any department of work he may have in hand. It will enable him also to know precisely the value of his supplies of necessary materials, so that no loss may arise from having to wait for them or procuring them in haste, which practically means paying a higher price than he would otherwise have done had his purchases been made more leisurely and with due consideration. It would be easy to extend the list of advantages which good book-keeping brings with it, but it is scarcely necessary to do so. Enough surely has been already stated to show to a thinking mind that it is better in every way to bear the little trouble of attending to it than the much greater loss almost certain to arise from its neglect.

That we have not exaggerated the causes which so often lead to failures on the farm, or the variety and importance of the work which must be done in order to secure success in it, we may with benefit to the reader give the following brief paragraph. It is from the pen of the accomplished as well as thoroughly practical editor of the *Agricultural Gazette*, Mr. John Chalmers Morton, a gentleman as little likely to put the case too strongly against the farmer as to omit telling him plainly what his faults are, and how to amend them.

"The small extent to which the practice of farmers is as yet amenable to the elementary principles of science is deplorable. The need of shelter; the folly of allowing rain to wash the manure; the frightful waste of straw; the reckless consumption of hay; the

injudicious use of roots; the want of system in the assortment and mixing of food; the foolish purchasing of bad foods; and the persistent practice of buying inferior animals—these and other faults of management are, we are loth to confess it, almost the rule. No doubt many of us know better, but still are guilty of similar weaknesses in our management. 'Any fool can farm if he has his pockets well lined,' and the wisest man must put up with bad buildings and restrained expenditure when he or his landlord is short of cash. Let him be as wise as Solomon and as strong as Samson, he cannot use either his wisdom or strength if he is crippled in his resources. Covered yards, well-arranged machinery, well-selected stock, increased labour, liberal use of artificial foods and manures, all mean more money, and we think Mr. Mechi is not far wrong when he gives his opinion that twice the present farming capital might be profitably expended upon the land."

But however closely the farmer attends to his business, and however fully he gives systematic care to those details to which we have in the preceding remarks drawn attention, it is clear that, well calculated as these are to insure success, it will not be secured without the help of others. These are, in the first instance,

The Labourers of the Farm.—The value of the assistance derived from these is increased in proportion to their mental and moral status. We have already said that mind is the great essential to success on the part of the farmer; but it must not be cultivated and applied by him alone, for but a tithe of its force will be developed if this be so ; it must also be shown and worked out by the man—the servant. It will

be of comparatively little use if, while the master has the power which knowledge alone can give, the servant be in utter lack of it. Nor to our mind is there anything more painful in working out some of the details of the farm than to see the well-conceived plans of the master ultimately set at nought, and rendered practically worthless, through the gross errors of those upon whom he depended to carry them out. It is only the master who, far in advance of many of his brethren, applies mind to the details of his farming, who is able to form a right conception of the loss which is sustained by the total, or almost total, inability of servants to carry out carefully matured plans. Scarcely anything tries the patience more than knowing that what might and would have been a success turns out only to be a loss and a depressing failure, chiefly through the ignorance—and what is worse, the ignorance which is sometimes gloried in—of those he employs. This ignorance there seems but little hope of overcoming, and yet there is actually no reason why it should not be overcome. There must be some way of doing this; the difficulty is to know what the way is. The whole work of the education of the labourer is not summed up in merely giving him a knowledge of the ordinary branches, or as they have been termed, flippantly enough, "the three R's"—reading, (w)riting, (a)rithmetic." For one can easily imagine men—indeed, not a few of this stamp are to be met with—having a very fair knowledge of the above accomplishments, and yet displaying, in the carrying out of their work, many of those characteristics to which we have been alluding, and which stand so thoroughly in the way of their doing it well, and of readily grasping the plans of their master.

What, then, stands in the way? Difficult as it is to answer this question correctly, we incline to think that it lies somewhere in this direction. In the ordinary systems of education, the scholars, be they young or be they adults, are so taught that they conceive education as a thing to be done—so much of this to commit to memory, so much to write, so many sums to cast up—and there, with many, the matter rests, little or no idea being entertained by them that there is some thinking to do, something to understand, some process to be gone through for which they ought to know the reason. Let those who have had much to do with workmen candidly say what they find to be their great defect, and the causes of nine out of every ten mistakes made by, and of time and money wasted through them. They will answer, we venture to predicate, almost invariably, that it is "want of thinking;" or, as we might put it, "failing to think that it was necessary" to exercise thought in connection with their work. It is indeed lamentable to hear so often the ready excuse for blunders, laziness, or waste, "I did not *think* of that, sir." That education of the ordinary kind is capable of teaching one to think is not, of course, denied, an educated man being certain to be more of a thinker than an uneducated one; still it is notorious that one may be in possession of a power, and yet not care to make it available. And this, we fear, is the case with a large number of workpeople. They do not care to think. Let us hope that it is not with many as it was with one of them, who, when taxed with his indifference to a piece of work which demanded some thought, replied, "Oh, we are not paid for thinking." With the young something may be done to bring about a different order of things;

with the old we scarcely hope for this—at least by way of appeal to their intellects. With such, however, fortunately or unfortunately, there is one appeal open—that of the pocket. Painful and degrading as this view is, we do not hesitate to say that it is a true one, and that it explains the exact relationship which many workpeople have to the doing of anything of an order higher than that of the merest routine in their daily work. Touch the pocket, and you touch the feelings of the workman. Let him understand distinctly that he must think, or that if he does not, and loss of time or of the materials of his master be the result, he will have to pay for them out of his wages—if the matter be put in this practical way, we venture to say that many men apparently hopeless will be influenced at least to try to amend, and this trial will be so far on the way towards reform. Some—and with reason—may think this plan not very feasible in times when the "real master is the man;" but these times may change—are, indeed, changing now. But even if they be not, there are more ways than one of working this proposed "appeal."

CHAPTER II.

POSITION OF THE FARM LABOURER—PRACTICAL EDUCATION OF THE LABOURER IN RELATION TO HIS WORK—INFLUENCE OF NEW MOVEMENTS ON THE GENERAL ECONOMY OF THE FARM.

WE shall now discuss the relation in which the labourer is placed, on the one hand, to his master, and on the other to his work. Even those but slightly acquainted with agricultural questions must be aware, from what has been given in the public journals, that a remarkable movement has been going on for some time in connection with the labour question. They must have read of meetings held to discuss wages, and of the rise in these to a point considerably higher than that to which farm-serving men have ever, or at least as a rule, been accustomed to receive. They will have read also of the application of the principle of trades unions to the work of the farm; and, more ominous still, of strikes on the side of the labourer, and of lock-outs on that of the farmer.

All this has introduced new elements into the relationship existing between these two classes, elements not at all calculated to render the difficulties with which both have had to contend more easy to be settled and got rid of. And this view by no means arises from an exaggerated estimate of the influences

put in force by both parties to this important question, nor from any inclination we have to take the part of one class more than that of the other. With every desire to hold the balance of opinion even between the two classes, it is impossible, we think, to come to any other conclusion than that the circumstances which have cropped up of late in farming districts must affect, in a marked degree, the fortune of the calling. Time will alone show whether the ultimate result will be prejudicial to its best interests, and consequently to the social ones, of the farmer and those he employs. That the immediate effect has not been beneficial, even in the most favourable circumstances, few will be disposed to deny who have a practical knowledge of the question. In some cases it would not be difficult to show that the effect has been disastrous to the employer, while it has been anything but favourable to the employed.

Those who are disposed to take an unprejudiced view of the case as it now stands between the farmer and the labourer must feel that it is, to say the least, an unfortunate circumstance that trades unions should have been introduced into rural districts in connection with farm work. It is perfectly legitimate for the labourer to endeavour to rise in the social scale, and, as a powerful help to him in this, to get an advance of wages. But we believe that all those who really know what farming is, and are intimately acquainted with its details, will agree with us in thinking that better means might have been adopted by the labourer to attain this end than those he has chosen. The principles of operation of trades unions and the practical details of farm work are wholly antagonistic. They cannot possibly operate together for a common

and useful end. It ought never to be forgotten that farming is altogether a peculiar calling if in no other respect than this, that as a rule there is only one period of the year in which its operations can be carried out. If that be missed, the season is lost. There are some few exceptions to this rule, but not many. Further, the weather exercises such an influence that certain operations, if they are to be done well, must be done under its most favourable circumstances. Hence it will be observed, even by those who are not practically acquainted with farming, that it is wholly unlike other industrial callings, where, if one chance be lost, another may arise, and that without waiting for a whole year. Farming, moreover, is subjected to chances of loss over which the farmer has no control, such as bad weather, diseases in stock and crops, &c., against which the utmost prudence is powerless for good.

We have said, therefore, enough—although much more might have been brought forward—to show that farming and trades unionism are thoroughly antagonistic. If the work of the farm is to be done at all, it must be done at certain times, and at those only: if, therefore, the servants of the unions have orders from "head-quarters" to strike work, and those orders, as will almost certainly be the case, be given with a predetermined purpose to fit into periods when the farmer will be most inconvenienced, the loss he will sustain may be easily conceived. Nor is the individual loss to the farmer the only evil resulting from such a system. It may be truly called a national loss, for food is precious, and as it cannot be produced more than once a year, and even then is liable to be lessened through disease, &c., it is difficult to over-estimate the national loss sustained by the action of such bodies

as trades unions. The products of other industries may be dispensed with by the people even for a considerable period without much inconvenience or loss; the food products of our farmers cannot.

One of the worst features connected with trades unions is their tendency to educate the men to strike. This may to some seem a strange statement; but it is nevertheless true, and those who have had much to do with men will not fail to have acquired pretty wide experience of its accuracy. A class of men who for years have gone on working upon the whole harmoniously, without even dreaming apparently of giving up their work suddenly, have been found, after the introduction of trades unions amongst them, to become gradually accustomed to strike, beginning at first with what was or appeared to be a real grievance as the reason for ceasing to work, but ending by doing so on the most trivial of excuses. We do not here refer to farm labourers; indeed, we have specially drawn our remarks from the experience of other trades as widely separated from farming peculiarities as could be; and this in view of being probably met with the objection that the reason why farm labourers were being educated to strike was, that they had been grossly ignorant of their "rights," to use a word much in vogue amongst unionist declaimers—in fact, did not know how ill-used they were.

This indulgence in the love of strikes has produced great evils, and caused infinite loss both to masters and men, but especially to the latter. In the great majority of instances, however, it has brought about its own cure, for the masters have introduced new modes of working, reducing the number of men required, while new machinery and appliances have operated still

more decidedly in this way. In one sense, therefore, strikes, by putting the masters thus upon their mettle, have in the long-run been a positive benefit to them. It is to be expected that in process of time we shall see a similar result in farming. In not a few districts where strikes occurred we have, in fact, already seen this to be the case. On many a farm the result of a strike has been that, when the farmer was compelled to do without labour for a time, he has by various expedients so managed to get over the difficulty which seemed at first sight to be insuperable, that he found himself able, as time went on, to get the regular work of his farm done with much fewer hands than he could at one time have believed possible.

The question then arises here, Could not much of the difficulty of the Farm Labour Question be got rid of by a systematic revision, so to say, of the labour staff in farms throughout the kingdom? We believe it could. Even in cases where a master has reduced his staff to what he believes to be the lowest point of working capability, he has found that when an emergency came he could get the same work done with a still further reduced staff. Such has been our own experience. These emergencies set one thinking as to how the same work can be done with less labour; and it is not seldom the case that a new system of working suggests itself, which on trial is found not only to be better than the old one, but that less labour is required by it. There are many departments in farm work, we feel assured, in which most important reforms could be made, by which not only labour, but materials would be saved. Not seldom, on comparing his practice with that of another, has a farmer discovered that he could effect a very considerable saving in more

than one department of his farm. This indeed is one of the great advantages of the book farming so much decried by some. Often have we heard of a farmer admitting that he had over and over again saved the cost of his subscription to a farming periodical, or that of even an expensive book, by adopting a hint from its pages. So also are farmers' clubs beneficial in this way. But the system of intercommunication of ideas is not carried out amongst us to the full extent of which it is capable. We are convinced that if "farming conferences," such as are held in the United States of America, could be established amongst us, so much practical benefit would be the result, that the difficulties now surrounding the labour question would be greatly lessened, while at the same time a vast deal of valuable information would be incidentally elicited. The difficulty—and we fear it will be some time before it is got over—connected with the carrying out of such conferences is the repugnance we have nationally, farmers of all classes in the community more particularly, to speak out. Often have we, after a formal club meeting, heard one of those who had been present privately offer some admirably suggestive hint from his own practice, and when asked, "Why did you not give the club the benefit of that?" he has replied, "Oh, I did not like to speak; I can't abide putting myself forward." The truth is that in their genuine simplicity of manners and modesty of opinion as regards their own abilities, our farmers are as bashful as boys when they are even asked to drink a health, or to do or say something before a large company even of their own equals. If we could but get the easy freedom of the market dinner-table, or, still better, that of the after-dinner smoking-room, established in our club discussions, it is

difficult to over-estimate the value of the information which would be elicited throughout the kingdom from year to year. Failing this, each farmer ought to run over every department of his farm, closely and carefully examining the minutest detail, to see how far he might reduce the labour required at the period of his investigation; and further, he should endeavour to follow up some train of thought which might lead to very important alterations in the system itself, or perhaps to the introduction of a wholly new one. In ploughing, in weeding and cleaning crops, in harvesting both hay and general crops, in the folding and care of sheep, in the feeding of cattle, indeed in every department, there are a vast number of farms in which a large percentage of the cost of labour might be saved by judicious and careful revision of the working systems adopted. If such has been done in many farms, why not in all? We are all of us but too apt to be satisfied with things as they are; and even when we introduce plans that result in the saving of much, we become careless about trying to save more. Let but the idea get established amongst farmers generally that their calling should be one of constant progression, and then we shall witness an improvement which will be as surprising as it certainly will be gratifying, and in all probability also the final settlement of the labour question which has been so long engaging our attention. The reason for this is obvious enough, for on the labour of the farm rests the whole fabric of farming; indeed, the discussion of it in one or other of its many departments is the very *raison d'être* of the present volume. No apology, therefore, is necessary for the above remarks; we believe that the points involved in them have the closest possible bearing on the vital subject of farm labour.

Although of late there has been less of the excitement and consequent proceedings connected with the "agitation" generally carried on by parties who, we do not hesitate to say, have no real interest in the welfare of the agricultural labourer, and are, as a rule, wholly ignorant of the peculiarities of his position, and of those of farm work generally, still enough mischief has been done, and sufficient of the evil influences remain to cause grave apprehensions amongst the true friends of the labourer as to the future of farming. Of these true friends we do not hesitate to class the farmers themselves as the first, as they are from the necessity of their position the most influential. We hear enough through platform and press utterances to make the outside public believe the contrary; but those utterances are not oracular.

What the future movements will be it is difficult to indicate, but it is clear that farming as a system will so feel the result of the past that it will be in many respects greatly modified, if not, as its best friends think and hope, vastly improved, affording another instance of how frequently good arises out of evil. It has been so in the case of other callings, where strikes so disastrous in their immediate results that future ruin seemed to be the only prospect, were, by being the cause of the introduction of new machinery, new processes, and improved methods of working, the means of marvellously bettering their condition. It will therefore serve some practical purpose to consider briefly in what directions farming may be similarly improved. One of the first points which presents itself, as being connected with the future of agriculture in this improved aspect, is the

Practical Education of the Labourer in relation to his

Work.—Those who are acquainted with agricultural economics are well aware how frequently the subject of education has been discussed. This, however, has been in its general features only, the special one named at the beginning of this paragraph having been only incidentally and occasionally glanced at. So far as general education is concerned, there seems a moderately fair chance that children will henceforth receive what is esteemed a good education, but the system by which this is to be secured does not, or will not, affect the adults, with whom we are at present only concerned. That there is great room for improvement in the general education of the adult labourer there can be no doubt whatever, but we do not hesitate to say that there appears little or no hope that this improvement will ever be effected. While, however, a good general education would greatly help forward the special one now under consideration, much can be done towards it even where there is only an average amount of intelligent smartness. The difficulty at the outset is to get men to see that they will be benefited by efforts of their own to acquire this special education. Accustomed all their working lives to plod on in a certain groove, they have come to regard their work, if they consider it at all, as what we may call a purely mechanical operation, requiring no effort of the intellect. Hence any remonstrance on the part of the master as to their indifference is met with open or concealed contempt, and should he throw out any suggestion as to improvements which they might themselves carry out, he is almost certain to be made aware that he is asking what he has no right to expect. It is, however, pleasing to record that there are notable exceptions to all this in labourers, who have adapted themselves with wonder-

ful facility to the new condition of things brought about in farming by the introduction of improved modes of working, appliances, and machinery. Indeed we look forward with great hope that this new "order" will have its reflex influence upon the general body of labourers, and make them see that their own pecuniary interests will be forwarded by adapting themselves to its varied requirements. Once convince men that they will make more money by paying attention to all improvements which the farmer may wish to carry out, and by learning how to work and take care of the higher class of machinery and implements now being so largely introduced, and their practical education will immediately take a start, and be carried forward with ever-increasing vigour.

One thing, however, is essential before this desirable state of matters can be generally effected, and that is that the labourer shall be a free agent, at liberty to work for whom and when and where he likes; in other words, he must not be trammelled with the dull and hopeless uniformity of working capability and effort enforced by trades unions. It is from no dislike to these, *per se*, that we say this; it is wholly in the interests of the labourer. And the reasons are obvious, not only in view of such considerations as we have just stated, but of those in the introductory chapter. No doubt—and it is fortunate for the farmer—all unions are not constituted alike, and some of them may not, therefore, have any other object than the legitimate one of raising the labourer's wages and otherwise bettering his condition. But where they are introduced with such other purposes in view as we have named, preventing the work of the farmer being done in the way he deems best, then we have little hope that the future

education of his labourers will enable them to take an intelligent part in the carrying out of improved modes of working, or the supervision of mechanical appliances more or less complicated. In such cases, when the labourer either cannot or will not take pains so to aid the master, it has been suggested that the only resource of the latter would appear to be to look to the importation of men from other districts, or from towns where they have been employed in different callings, but who have a desire to work in the country, or who may be induced to do so by the attractions of, if not very high wages, at least regular and steady employment.

Some readers may think this last-named scheme a very unlikely one to help the farmer out of the difficulty. But it is one of the singular phases through which the rural labour question has recently passed, that townsmen have migrated to farming districts in considerable numbers. We confess, however, to feeling that this is altogether an abnormal state of things, and one not likely to continue, if indeed it has not already nearly ceased to exist. Nor do we see that the farmer is much more likely to obtain good men from other farming districts, as it is scarcely probable that their masters will be disposed to part with them, or the men themselves be willing to leave.

It is clear then that the farmer will have to look to other elements of his holding, to see whether he can introduce such improvements in, or modifications of, working it, that he may be independent, at least to a certain extent, of the difficulties of the labour question. As pointed out at a recent meeting of one of our Chambers of Agriculture, there is every inducement for the farmer to render himself independent of the

labourers, as in too many cases the work of his farm costs too much—so much, indeed, on some farms that the balance-sheet shows a loss; this loss arising from the excess of labour employed, which is demanded by the peculiar system of farming adopted.

As a means of reducing this labour, the further increase of the use of machinery is now strongly advocated by competent authorities on farming economics. The introduction of machinery on farms has effected quite a revolution in the working of many of their departments. Work which in years gone by was compelled to be performed by manual or horse power is now done more quickly and far more efficiently by steam-power. By its aid machines thresh the corn, grind it for the food of live stock, cut the straw, slice or pulp the turnips, &c. In the field we see the steam plough going over an extent of land, and working it to a depth which but a few years ago was never dreamt of by the most sanguine; while the resulting crops are reaped and mown by machinery also. But wonderful as all this is, we are looking forward to greater marvels still, which our engineers and machinists promise us, and, as we think, do not promise in vain; so that much as the power of steam, with its attendant mechanism, has done for the farmer, it seems destined in the future, and that at no very distant date, to do more, but in what direction we are not now concerned about. It is sufficient for us to state that what we have named will bring about considerable modifications in the present style of farming. But here again we take leave to think that the extended use of machinery, instead of getting rid of, will rather increase the difficulty of the labour question. For past experience has clearly shown that machinery increases the necessity for more work-

men being employed, and certainly on the farm these workmen must be more intelligent than the average run of those engaged in its ordinary work.

On this point it is not only fair to the farmers, but necessary to state, as considerably tending to set right what has been intentionally kept back by their pretended friends, that they do not, as a rule, object to pay higher wages than have been or may yet, in some districts, still be given; but what they do object to is, first, that labourers, when at all skilful, do not give a fair and just equivalent in work for the wages they receive; and secondly, that they have a difficulty in meeting with the intelligent labourers which the modern improvements in and modifications of farming imperatively demand. As to the first of these points, it is too notorious to be denied that men are not what they used to be. When a complaint is universal, not merely emanating from one class of employers, but from all, it is impossible to find better evidence that the charge is but too well founded. Now from all classes of employers this complaint comes, backed by such evidence as it would be futile to gainsay; nay, the most striking proof of its accuracy is to be obtained from the naïve statements and admissions of the very men themselves. These admissions take many forms, and the excuses brought forward are but the outcome of the teachings of those leaders of working men's opinions whom they have been but too ready for their truest and best interests to follow. These leaders have given ample proof of how well they know how to appeal to the lowest feelings of the men—to play, so to speak, upon those strings of humanity which give forth but the jarring sounds of discord. As regards the second objection of

farmers, namely, the lack of intelligence on the part of the labourer, we have already shown how that in great measure arises; but even when intelligent labourers are met with, the farmers complain, and with too good reason, that they are the very men who emigrate to other places more or less distant, in the hope of bettering themselves—a hope not always realised, and so often doomed to disappointment, that if they could, they would only too gladly return to the employment they so eagerly left. We know many whose experience has been precisely this, but who cannot return, having exhausted all the means which would have enabled them to do so. If ever the true history of the farm-labour movement be written, and the phases of the union life and experience of the labourers be given, a sadder page of social life will be left for posterity to peruse than many of those now living wot of. The grave responsibility of those who so largely, nay, who wholly brought about the new order of things, will then be better understood than now.

Another direction in which a modification in farming seems likely at no distant day to be brought about is cropping. It does not follow that this will absolutely demand less labour, but rather that the work required will be of a different character, and will moreover tend, as we believe, to such an increase both in the quantity and quality of produce, that the farmer will be enabled, out of his augmented profits, to pay for the mechanical appliances which the system will demand, as well as for the higher class of human labour required. Various systems of the kind, here only hinted at, have been described from time to time in our agricultural journals.

We could pursue this subject much further—entering,

'or example, into details of various modifications pro-)osed, by which our ordinary educational system might)e rendered useful in imparting a knowledge of agri-:ultural work in all its departments, including those nigher ones which have been engaging our attention. This, however, scarcely comes within our province; we have said enough on the subject to enable the reader to judge what the future position of farming is likely to be, and what influence the labour question will have upon it. But before concluding we would beg to draw attention, in a brief sentence or two, to a subject closely connected with the one we have been :onsidering. This is the perquisites or allowances which in many districts are given to the labourers in addition to their money payment. Much has been written as well as said about these, and, like all other questions connected with agriculture, this has called forth a wide diversity of opinion. Unfair advantage, moreover, has been taken by some agitators, who, more desirous to forward their own ends than to arrive at a correct conclusion on disputed points, although aware of the existence of the perquisite system, have ingeniously concealed the fact. By this means, and by naming only the amount of money wages paid weekly to the labourers, they have continued to impress the outside public with the idea that they are miserably paid. But these allowances are really of considerable money value, and are generally, if not always, exceedingly useful to the labourer in his household. It is only fair, therefore, in reckoning what the labourer makes by his work, to include the value of these allowances. When this is done his condition assumes a much more favourable aspect, and will bear comparison with that of workmen in towns,

who are put before the general public as examples of highly paid men.

The reader, however, can easily understand how this system of allowances may give rise to a considerable amount of jealousy and disputes; for, as human nature is constituted, one may readily conceive how inclined the labourer will be to suppose that the master makes more of the allowances than they are really worth. And the labourer will, unfortunately, have a few kind friends at hand ready to aid him in taking this view by making elaborate calculations to prove that their money value falls considerably short of what has been stated. Those who are wholly against the system bring forward, amongst other arguments, the case of factory workers or other trades where it does not exist. But the cases are very different, there being obviously greater facilities for giving allowances on a farm than in a factory, and this not merely because the number of workers on the farm is much more easily dealt with, but because the farm labourers are placed under circumstances essentially different, and in which certain perquisites minister greatly to the comfort of their households. Take, for example, the allowance of milk. This is dispensed generally in two ways: first, the farmer may give an allowance from his own stock, or, as in some districts in the north, the labourer may be the owner of a cow, the allowance taking the form of the animal's keep by the farmer. As regards this particular article, it is so thoroughly and completely a household necessity, especially where there are children or old people, that we would strongly advocate any system by which a supply could be secured to the labourer.

In close connection, however, with the subject of

perquisites there is another point which has been studiously kept in the background by agitators, the professed friends of the labourer, and that is the amount expended by farmers in maintaining wholly, or to a large extent, old labourers who have grown grey on the property. This, of course, redounding as it does to the credit of the farmers, would not have been a fitting thing for statement in platform or press utterances, the object of which was to show that the farmer was greedy with and tyrannical to the labourer, who, of course, would be made to represent all the virtues. This maintenance of inferior, or partially inferior, men is carried out to a very much larger extent than is generally supposed. Nor does the outlay of farmers in what may be truly called kindly charitable work end here. They often also keep able-bodied men during bad weather, when farm work cannot be done. For this they pay in the aggregate large sums, as well as in employing the young folks of labourers' families when they are so large as to render it a difficult matter for their fathers to make ends meet. While preparing this for press we have had our attention drawn to a very able paper, entitled "The Labour Bill in Farming," by Mr. Frederick Clifford, Barrister-at-Law, in the *Journal of the Royal Agricultural Society* for 1875. In this paper, to which we would earnestly recommend the attention of the reader, and the views of which are on nearly all points coincident with those we have given in this and the preceding chapter, Mr. Clifford has the following remarks on the above-named subject:—"Go where you will, you will find old servants retained upon farms; sometimes receiving full wages, sometimes treated as 'three-quarters' or 'half' men, but hardly ever earning the wages paid

them, if judged by the standard of remuneration given to labour in the parish. This regard for old services is highly honourable to the farmers. No one will pretend to say that they are the only class of employers who consider the claims of old and partially worn-out servants. But it may be said with truth that there is no other class of employers who employ this unremunerative labour to anything like the same extent. The result must, and does, tell upon the labour bill. The older men are really receiving an annuity for past services, represented by the difference between their wages and the value of their labour. It follows that either these annuities must come out of profits, or the wages of able-bodied men must be lower than they otherwise would be, in contemplation of the provision which the farmer is expected to provide in old age."

It is only fair that such honourable conduct on the part of the farmers should be made more publicly known than, unfortunately, is the case; and all the more, seeing how much they have to bear in the way of rebuke and fault-finding.

On the whole, however, we are inclined to take the view of those who maintain that the simplest way of paying the labourer is by money wages alone. Apart from the circumstances we have named tending to make the labourer dissatisfied, it may be accepted as a rule that he prefers to have money, with which he can do as he pleases. Besides, it saves the complication of reckonings arising from so many details of allowances here and perquisites there, the whole being reduced to the simple elements of so much work done, so much money paid for it. A very important modification of the way in which money is paid directly to

the labourer is paying not by day wages, but according to the value of the work done, that being regulated by a standard rate agreed upon. This will be fully described in the next chapter, but on the subject of modifying even this piece-work system we give the following.

In the paper previously referred to, Mr. Clifford asks this question: "Now can employers present to him the same adequate motive" (referring to the stimulus given to a man's working when he has possession of a "bit of land") "in another form, and lead him to serve his own interest and theirs by working not necessarily longer hours, but by working harder while he does work?" Mr. Clifford believes that this can be done by the general adoption of the system of piece work. But he suggests that this might be improved upon by adding to it something like an adaptation of the co-operative system. "Given an average day's work," he says, "and the usual pay for it, then the extra work done, measured by the same standard of pay, would yield a fund, of which two-thirds might fairly go to the labourer, and one-third to the employer for his trouble in planning and laying out the work and for capital invested. It is of no use to conceal the fact that the adjustment of a fair tariff to meet the varying conditions of different farms in different districts would involve much trouble, and more personal supervision than is frequently given by farmers. But it is a farmer's business to take trouble in what concerns the cultivation of his farm, and there is no task to which he might devote himself with greater advantage to his labourers, to himself, and to the State, than that of endeavouring to apply this piece-work system to his own holding."

CHAPTER III.

CONTRACT WORK, PIECE WORK, OR TASK WORK.

FROM what we have already said, the reader will perceive that the labour of the farm naturally divides itself into two great classes, each having several subdivisions. The first division embraces what may be called irregular or desultory work, the second regular. It is difficult to fix upon a name which precisely indicates the character of work done under the first of these classes, and the one we have chosen is not meant to imply the idea that the work is of such a kind as to admit of being done by fits and starts, as it were, and guided by no rule. On the contrary, much of it coming under this class is so far regular that it may be done every day and at stated intervals; but yet, so far as the time it occupies is concerned, it is irregular, because so many elements beyond the control of the parties engaged in it may come into play. Perhaps the case may be best illustrated by the work of cattle feeding, where the cattle are housed or stall-fed. Now, as the feeding is done every day, and so many times a day, it may be classed as regular work; but because animal life is dealt with, some accident may happen or some contingency arise which will materially influence or

retard it. It may thus be said to come under the head of irregular work; and to this class of farm labour it is obviously difficult to apply the principle of contract, which forms the subject of the present chapter.

Contract, Piece, or Task Work.—In all calculations connected with this contract work time is an essential element, and that upon which all engagements are based, in which one man, the labourer, does so much work, whilst his master engages to give him so much money for it. Work such as loading manure into carts from the dungheap, draining, ditching, fencing, digging, &c., are operations which go on regularly and with few or no interruptions; and if the latter do occur—such, for instance, as those arising from accidents or "faults" of the ground, &c.—they come within what is called the contractors' risk, and do not invalidate or interfere with the terms agreed on. But it is different in the case of the "irregular class" of work, not only for the reason already stated, but also because men who are paid to feed cattle, for example, at so much per head, might not be able to resist the temptation to hurry the work in such a manner that the animals would be sure to be neglected, and some of them perhaps wholly overlooked. Now an essential element in the management of all live stock is a regular attention to their wants, and kindly, patient treatment of them. Moreover, where life is concerned, and especially when breeding and rearing are carried out, there are occasions on which the amount of work done cannot be always calculated, as in the case of calving or lambing, when much patience, time, and attention have to be given. Roundly speaking, then, the first or irregular class of work may be defined as

including nearly all that is done at the steading or farmery, while the second or regular class embraces most of that done exterior to it, as in the fields and roads.

Task work, contract work, or "piece work," as it is almost universally termed in other trades, is comparatively of recent introduction into farming; and many, so far from agreeing to the principle, are strongly opposed to it. But in all classes of work to which the principle can be fairly applied without involving too many contingencies or including too many risks, it is, we think, the fairest that can be adopted in the interest of master and man alike. It requires but little knowledge of human nature to see the effect which the principle has on the labourer. It is almost certain to act as a great incentive to him to become thoroughly acquainted with the precise nature of the work he is likely to undertake, so that he can hit upon the best and quickest way of doing it with the least labour to himself, if not to the highest satisfaction of his employer. It also—although some moralists may object to this being considered a good feature of the principle—induces a feeling which urges him to excel his fellow-workmen, and though this may take the form of a species of unworthy rivalry, it need not necessarily do so, and may be healthily maintained. The ordinary risk—and it is one wholly on the side of the master—which may be set against the risks the workman undertakes, is that the work may be hurried over, and therefore improperly done, in his anxiety to do apparently more in a given time, and thus increase his gains, to the evident loss of his master. There are, however, safeguards for the master in this matter, and these we name here. First and

most important is the knowledge which he possesses, or should possess, of the work to be done. This is obviously essential, and if the employer is but a farmer in name, he must be content to bear the losses which such a position carries with it. True, he may make up his own deficiencies by delegating to a foreman or bailiff the supervision of the work which he is unable himself to carry out; but at the best it is only putting the risk on one pair of shoulders, in place of dividing it amongst the many workmen. Of course it may be said that no gentleman farmer on a large scale takes the trouble to superintend all the work done on his property, but is compelled by the circumstances of his position to delegate to some one under him this necessary duty. While we admit this, however, we should not forget the truth of the old proverb, that "a master's eyes are worth a hundred pairs of hands." At the same time, this is not the point for which we contend, which is that it is essential that the master farmer should possess an intimate knowledge in detail of all the work done on his farm. The mere knowledge that the master has this practical ability will keep the workmen in continual fear, knowing that he may at any time find out whether they are doing their work badly or otherwise. To this may be added the further stimulus to do their work well, that he may at any time turn up on the scene of labour unawares. Indeed, we consider these irregular or uncertain visitations of the master a far more efficient preventive of bad work than those paid at certain, and therefore known, periods of time.

But little knowledge of human nature is required to prove the truth of this. Even in the case of a gentleman farmer who may, perhaps, be farming as a means

of pleasure, and to whom profit is of little moment, the mere possession of a knowledge of the details of the business cannot fail to be otherwise than a source of great satisfaction. Failing, however, this knowledge in the farmer or proprietor, it will be necessary for him to secure the services of an overseer who thoroughly understands every detail of what is to be done. The second safeguard against task work being hurried and imperfectly done by the workmen, for the sake of obtaining a larger amount of pay, is in "measuring up the work." The value of this is obvious, but is contingent upon the conditions of the "contract," or "agreement," which is the third guarantee, or safeguard. Nothing should be left to chance, or word of mouth. The mischievous principle best described by the phrase, "Oh, there is no fear at all but that you will do right, and I will do right," should never be introduced into "task work." Where the farm is large, the work to be done extensive, and the cost pretty large in amount, the safest way is to have all the details of the arrangement put in writing, more especially where the contract is let out to, or undertaken by, one of the men, who guarantees the efficiency of his fellow-labourers. This may appear to some to be making too much of the matter, but after all the right way is the best in the long-run, and a few lines or short printed forms will be enough in most instances to record the arrangement made. If such records serve no other purpose, they are valuable because they can be referred to at any time, and form as it were the history of the work done upon estate or farm.

As to the way in which the contract is drawn up, whatever be its form, certain points must be attended to. First, the nature of the work and its locality on

the farm; second, the rate per load or yard, or whatever the standard of the work may be, which is to be paid; third, the time at which the work is to be finished; and, lastly, the periods, weekly or otherwise, at which payments are to be made, and their amounts, which latter may be decided either by measuring up quantity of work done, or as per stated sum. This latter is generally, especially in large contracts, a percentage only of what the measured or estimated amount may be, leaving a balance to run on till final settlement. (For some remarks on this subject see the volume "Landed Estates Management" in the present series.)

We shall now glance very briefly at some of the leading classes of work which may be done by "task," "contract," or "piece" work. It will be seen that under the following heads of work we give no prices, and this for the simple reason that there is no rate or standard applicable to all districts of the kingdom, and even in districts where a rate is established at one period, it will be very likely altered at another. Instead of a statement of prices, we shall give what we trust will be more useful—some practical hints connected with the doing of certain classes of work specified, work done, amount, best mode of doing, &c., commencing with

Work performed and finished, or begun at the farmstead or buildings, and finished in the fields.—Of this class is loading manure from the pit or stances, and unloading or distributing the same on the fields. The first item of work is paid by the cart or waggon load. In some instances, as in the case of transferring to the field for the purpose of making a manure heap there, the unloading in the field, the formation of the

heap, and the trimming up, are all included in one payment. In other cases the unloading at the field and the making of the dungheap are paid for as separate items. The amount of work done under this head varies, as may be supposed, according to circumstances, the mere condition of the manure materially influencing it. The average farmyard dung, or manure, weighs a ton for a cubic yard, and an able-bodied labourer can remove from the yard and lift into the cart twenty-four tons or cubic yards per day. But the weight increases with the density. Thus a lot of manure, when put up fresh or in the long state, we may suppose to weigh five tons; but when half decomposed its weight will have decreased one-fifth, and when thoroughly rotten or short, two and a half tons; but with the decomposition the density increases, so that it takes more to form a cubic yard: the twenty-four yards, therefore, of fresh dung which a man is able to fill are reduced as much as one-fourth. In turning and mixing the manure heap a labourer can manage thirty cubic yards per day; but the above circumstances as to its condition are reversed, for fresh manure, consisting of long straws interlaced with each other, is more difficult to move and lift than when "short," of which he can manage thirty-five cubic yards per day. A manure heap can be covered with soil at the rate of twelve cubic yards per day, the depth of the covering being from six to nine inches. This class of work is generally paid for by the job, and sometimes it is measured, which is by far the best and surest way. Thus six square yards covered to a depth of six inches make a cubic yard of soil, which may be paid for at a certain price. In the *carting of manure* from a steading to the field, for the purpose of farming another heap in the latter, a good

deal of the rapidity with which the work is done depends on the way in which the filling and transit to and from the waggons are done by the men engaged in the operation. The overlooker should see that this work is well arranged, so that it may go on continuously, with no breaks, gaps, or stoppages, such as that arising from men standing waiting for the cart to come up. It may indeed be stated as a general rule, that next to the doing of the work, the most important matter is the way in which the men are organized to do it, and according as this is well or ill done, the profit or loss varies. Some have a remarkable knack in arranging the work to be done, as well as the men to do it, in a way calculated to make the best of the job, while others fail so lamentably in this, that the successive processes get so huddled up that the workmen are confused, and lose much of their time, while more hands are employed than are really necessary. The master who knows what work is, and how it should be done, can scarcely have a better method of judging whether the foreman is clever and well fitted for his position than by the way in which both work and workmen dovetail as it were together, so that all goes on smoothly and without a hitch. This applies, as we shall see, as well to the work of the farmsteading, such as cattle feeding, as to that of the field.

Coming now to general *outdoor* or *field* work, perhaps the most important, as it is the first operation to be done in improvement of land, is

Draining.—This is of a class specially adapted for contract or piece work, inasmuch as considerable distances or lengths of drains generally have to be cut, so that although differences in the nature of the soil

are often met with, causing variations in the rate of work done, still, upon the whole, it is of that class which some designate as "straightforward running work." It is generally estimated for by the rod or chain lineal, and of course the expense varies according to the nature of the soil and the impediments it may offer to the progress of the work. Of all field work, draining is pre-eminently that which demands a close supervision on the part of the foreman or master; there is none which offers so many opportunities for the workmen to scamp, and this from the fact that the work is covered up when finished, with all its defects, if such there be. We regret to say that the close supervision here recommended will not seldom be required, the workman of the present day, in too many cases, being more anxious to hurry on pay day than to do his work well. In the olden time the workmen took a pride in their labour, and would have scorned to scamp it, if, indeed, they knew what "scamping" meant. That the charge against the workmen nowadays is not without foundation abundant proof exists. Perhaps the most striking, as it is the most closely allied to the subject under consideration, is the enormous number of house drains which have been discovered with the work absolutely undone; that is to say, the drain tubes have been put in the trenches, but the trenches have not been properly cut, nor the bottom levelled; and what is worse, the tubes themselves have in many cases been left wholly disconnected, thus making the work quite useless. The same may be said of field drains, not because we believe that it has been done to a like extent, or that it has often been done; but it *has* been done, and may be done again; and we wish to impress this

fact upon the master, so that he may be able to prevent the evil. Many may not believe that the practice exists, and that the workmen are so lost to all moral obligation as to be able to bring themselves to perpetrate such a shameless trick. If so, their experience of the working man has been of a happier description than that of many others, and this we say without being at all anxious to take or give an ungenerous view of him as he is. But whether the work be scamped from design or not, the close supervision we have recommended should be none the less followed, in order to avoid the results of carelessness on the part of the workmen employed. Now, we fear it will be difficult for those who charitably believe that workmen are incapable of scamping, to take a similarly lenient view respecting his habits of carelessness, and carelessness is just as bad in its results as wilful neglect. It is unfortunate that a large number of our working men should not habituate themselves to exercise thought while executing their work (for remarks on this, see preceding chapter), and that thought is essential to the doing of work well need not be here reiterated. It is hard that the master who plans the work should not only have to pay for its being done, but also find the thinking for its being done well.

We have not thus dwelt upon a point of little practical importance; on the contrary, it is one essential to be considered and ever borne in mind in conducting the labour of the farm. A proper attention to it largely influences the quality of the work done, the time taken in executing it, and consequently its total cost. A fact or two as to drainage work may conclude this section. Taking the depth of a drain at 4 feet, the mean width at 14 inches, the number of

cubic yards in each length of 55½ yards will be 2·85; with a depth of 3 feet, 2·14 cubic yards; with a depth of 3 feet 6 inches, 2·495 cubic yards; with a depth of 4 feet 6 inches, 3·20 cubic yards; with a mean width of 18 inches, and a depth of 30 inches, the cubic yards will be 2·204; with a depth of 3 feet, 2·75; with a depth of 3 feet 6 inches, 3·21; with a depth of 4 feet, 3·66; with a depth of 4 feet 6 inches, 4·12; and with a depth of 5 feet, 4·58.

Ditching.—Ditching may be divided into two classes: first, cleaning out old, and second, the cutting of new ditches. The work of the first class is comparatively simple, and is usually taken and paid for at so much per lineal yard, rod, pole, or perch. If the workmen engaged have been any length of time upon the farm, they should have a fair notion as to the quality of the soil, which regulates the difficulty or otherwise of the work. If not, a sufficiently accurate knowledge of it may be obtained by examination of the ploughed land near it, &c. If the soil taken out in *cleaning old ditches* is simply to be thrown over the surface of adjoining land, the depth of the drain and the spreading of the thrown-out soil will form elements in the estimate. But as the soil of ditches, especially if they have been allowed to remain uncleaned for a season or two, is more or less rich in fertilising ingredients, by far the best purpose to which it can be put is using it as a basis for the formation of compost heaps. In this case the soil has to be thrown on the margin, and afterwards removed to the site of the heap. The lifting into carts, and taking it out again, at the compost heap, will have to be estimated for. The trimming of the hedges, and the formation of the proper angle of the sides, are included in the price

taken. Ditch work being all open, there is but little opportunity for scamping; a walk along the whole length will therefore show whether the work has been well done. In the *cutting of new ditches*, involving unknown elements, as the nature of the soil, &c., estimation is a little more difficult: the only true way, however, to describe the details of the estimate is to decide upon the width and depth of the ditch, from these to calculate the cubical contents in yards, per rod, perch, or pole, and fix the price per yard, according to the conjectured average state of the soil. The difficulty of the work will depend upon the nature of this, the worst of all being a close adhesive clay: this often requires to be removed, occasioning some difficulty before it can be thrown up, and off the spade. This obviously introduces elements not easily reckoned, such as the time taken in digging, and in throwing aside the soil. The distance to which it is to be thrown is also another element, although it will perhaps be the best way to heap it up only so far from the edge that there will be room for trimming and finishing, the removal being an after consideration. If the ground be stony, it introduces another difficulty; for the stones may, and very likely will, vary in size and character; moderately large and round stones opposing less difficulty to the entrance of the spade, and their removal, than small and flat ones, especially if these lie parallel to the surface. The former are valuable for many purposes on the farm, and pay for their collection and removal, which may be priced at so much the cart-load or ton. In some instances the soil has to be removed to a distance, in which case the cost of wheeling has to be considered. The top spit, in nearly all cases of new ditch-cutting, is reserved for

the formation of a hedge bottom; this being thrown to one side, while the lower soil to be wheeled off is thrown to the other. Again, in some parts of the length of ditch, in order to obtain proper fall, the depth of the ditch may be such that planking is required to admit of the excavated material being wheeled out. This, again, introduces another element in the estimate to be accounted for. From what we have said, it will be seen that there is a difficulty in stating the amount of work a man can do in this class, but the following may be useful. In a day's work 15 cubic yards of light loam, sand, or gravel may be dug and filled, of strong clay 12 cubic yards, of chalk 10, and of strong loam 14. A man may remove to a distance of 60 feet from 70 to 75 cubic yards of medium loam soil a day. If to a distance of 50 yards, two fillers and two wheelers will be required for each digger, if the excavation is made in compact, firm soil; if in loose soil, the wheelers, diggers, and fillers must be equal in number; in clay, for every four diggers, five fillers and wheelers will be required.

The filling up of old Ditches.—The best way is, as before named, to estimate the cubical contents of the ditch, and allow so much per rod or chain, or the work may be taken "as it lies," or by the job. The carting, including lifting from the heap which supplies the material, is either taken separately or included in the job. Where new ditches are being cut and old ones refilled, it is sometimes arranged to use the materials taken from the new for filling up the old. While on the subject of excavating work, it may be as well here to note that liquid manure tanks at the steading are taken at so much per cubic yard, as if excavated soil; the working of the diggers, fillers, and wheelers being

arranged and estimated for much in the same way as for new ditching.

The saving of liquid manure is now becoming more and more a part of modern scientific farming; a few notes as to the contents of different sizes of tanks for storing it may therefore be useful. And first as to "square tanks." In the following notes the first figures denote the dimensions of the tank—that is, the side of the square; the second figures denote the number of gallons in a depth of 4, and the third ditto at a depth of 5 feet from the surface (6—896—1,120), (7—1,200—1,000), (8—1,592—1,990), (9—2,016—2,520), (10—2,480—3,100), (11—3,012—3,765), (12—3,584—4,480). To find the number of cubic feet a rectangular tank contains, multiply the width by the depth, and the result by the length; for the number of gallons, multiply the cubic feet by (in round numbers) 6; and for the weight in pounds the number of gallons by 10. As to "circular tanks," for every foot in the depth, a diameter of 3 feet will give 440 gallons; of 4 feet, 78 gallons; of 5 feet, 122 gallons; of 6 feet, 176 gallons; of 7 feet, 239 gallons; of 8 feet, 313 gallons; of 9 feet, 396 gallons; and of 10 feet, 489 gallons. Taking the depth to be uniformly 10 feet, with a diameter of 9 feet, the contents will be 2,269 gallons; with a diameter of 11 feet 10 inches, 4,538 gallons; and with a diameter of 14 feet, 6,837 gallons. To find the number of cubic feet in a circular tank, square the diameter, and multiply it by 7,854, which will give the area of the end; then multiply this by the depth, the result being the number of cubic feet required. For the number of gallons and weight of water to be found by rule for square tanks, the depth should be calculated

from a point of, say, 12 to 15 inches below the level, a point from which the springing of the arched cover of the tank commences. Where a circular tank has a depth of twice the diameter, the largest capacity is obtained, with the least interior surface, and therefore of cost of lining material.

Ploughing.—To describe all the varieties of ploughing would take up a very large portion of our space; but this, fortunately, is not required, for within the last decade or two the preparation of the soil for various crops has undergone such a revolution, that ploughing is a matter of extreme simplicity compared with the complicated processes of the old system. The reader may verify the accuracy of this assertion by taking up any work on the practice of farming, published, say, some twenty-five or thirty years ago. In it he will find enumerated a series of various kinds of ploughing, the number of which forms a singular contrast to the operations observed in the preparation of land for the very same crop described in any recent work which he may choose to consult. Ploughing on some farms is altogether done away with, the operation known as grubbing being solely employed, and that too with singular success. In connection with this fact it is only right to state, although incidentally and briefly, that to William Smith of Bletchley is due, to a very large extent, the honour of showing what could be done by this new system, more especially when allied so steam-cultivating mechanism. The fact above stated reduces what we have to say on this point to the contideration of what may be called ordinary ploughing only; that is, in which the surface of a field is moved or stirred and turned over in a series of oblong furrow slices, lying at an angle of forty-five degrees to the

plane of the land. Of the closer details of the system of ploughing, an illustration will be found in the volumes on "Outlines of Landed Estate Management" in this series.

It is scarcely necessary to say that the ploughman must have a thorough knowledge of the implement he works with, and the capability of exercising at least some fair degree of thought and powers of observation as to its working in various soils and under different circumstances. Ploughing seems an easy thing to do, but it is far from that, as one may find out by noticing different men at work. One will plough a large area, with ease to himself and to his horses, in the shortest possible time, while another will undergo an extraordinary amount of muscular exertion of the most fatiguing kind with poor result, both as to quantity and quality of work done; and while the horses of the one seem to partake of the steady ease and thorough mastery of his work of the ploughman, those of the other appear just as ready to share in his excitement and to sustain heavy fatigue. The work done between these two extremes will be found to possess all degrees of excellence or the reverse.

To secure efficient and economical ploughing (ploughing which pays the master, and does not unnecessarily fatigue the ploughman and the horses), there must be a perfect "understanding," if the expression may be allowed, between the ploughman, the horses, and the implement; and to attain this desideratum requires the exercise of no small amount of patience and skill. We have elsewhere dwelt, although briefly, on the value of kindness as shown to the animals of the farm; and in none of its work will this be more clearly displayed than in the case of horses employed

in ploughing. As on well-appointed farms each ploughman has his horses allotted to him, he will have ample opportunity for studying their peculiarities, and they to study his, strange as this last statement may to some appear. He should begin at once to look upon them as his own; to treat them so kindly that they will become thoroughly tractable in gladly doing his bidding, with the very slightest exercise of trouble on his part. The terms used for guidance of the animals do not require to be numerous, though of course they will vary in different parts of the country. Thus the words indicating directions for the animals to go to the right, to the left, to stop, to go on steadily or briskly—these are alone sufficient, while the reins need scarcely be touched. Chastisement, as a rule, should never be employed. Some men shout and bawl, and, what is worse, for it is useless and silly, keep up a continual round of oaths while they tug at the reins, so that the animals get dull and careless, or restive and excited. The man who thus deals with his horses may be set down by the master as wholly unfit to have their charge, or very unlikely to get good work out of them at any one of the varied employments of the farm. The work of ploughing should be so arranged that no long intervals between the feeding and resting times at stalls should occur. Long fastings are specially bad for, and rapidly reduce, the working powers of the horse: he is provided with a very small stomach, incapable of taking in large supplies of food at a time; and to force him to draw from the stores, as it were, of his physical system, is the most wasteful, cruel, and dangerous kind of treatment. Presuming the horse to be well and judiciously fed, and that the implement is properly adjusted to

the soil in which it is worked, he should be kept ploughing at a quickish rather than a sluggish pace. Some ploughmen keep their horses going at what may be called the extreme of sluggishness, under the mistaken idea that it is easier for the horses; but this pace, which now and then amounts almost to positive standing still, is, on the contrary, very fatiguing to them, while the work done is, of course, materially less than when they are kept at the sharp pace recommended. The frictional resistance to the plough is the same at a high speed as at a slow, the extra exertion being simply equivalent to that to which a horse is subjected when trotting a trifle faster than usual. The average rate of ploughing is a little over two miles an hour, but if the implement is well adjusted this may be increased to fully two and a half, for the reasons just stated. More loss of power is occasioned from the plough not being suitable for the class of land in which it is made to work, or from its bad adjustment and handling by the ploughman, than by causing the horses to go at a brisk pace, their fatigue and loss of power being considered as equivalent.

It does not come within the scope of this work minutely to describe the plough and its adjustment, but we may state that, independently of the way in which this adjustment is done by the ploughman, so as to make it take more or less land in proportion to the breadth, or to cut deeper or shallower in relation to the depth of the furrow slice, great loss of power and proportionate fatigue to the horses are caused by the manner in which the latter are yoked to the implement. Some ploughmen have their horses so far away from the plough that they not only cannot exercise the proper command over them, but are too far from the

resistance which the soil opposes to the progress of the implement. We may illustrate the advantage of yoking horses to the plough as near the point of resistance as possible by the familiar saying, that the closer a horse is to his work the better. Considerable tact is required by the ploughman in yoking, and also in having the harness so adjusted that it may form a part of the general appliances of the plough, as well as be tempered to the various requirements of the work. Thus, although the plough itself can be so arranged as to take either more or less depth of land, the harness may also aid in this. By so placing the back band on the horse, moving it backwards towards the plough, and thus altering the angle of the line of draught, making it more acute from the point at which it is attached to the bridle of the plough to that with which it is connected with the harness, a lesser depth of furrow is taken; whereas by shifting the back band nearer the collar, and thus lowering the angle of line of draught, the plough is made to take a deeper cut of the soil. Again, the breadth of the furrow slice, so far as the plough itself is concerned, can be altered by shifting the bolt of the draught chain, right or left, in the holes of the bridle, and the same may be effected by adjusting the harness. The furrow may be increased in breadth by adjusting the length of the reins by which the two horses are connected, so as to enable the one nearest the land side to increase his distance, or walk farther from the horse on the furrow side of the plough, a narrower furrow being obtained by reversing the arrangement. The depth of the furrow slice may also be altered either by increasing or decreasing the length of the draught chain, or raising or lowering the bridle of the plough;

the first of these increasing, the second decreasing the depth of the furrow slice. Once the plough is fairly adjusted to its work, half the labour of ploughing may be said to be done, it being presumed that the ploughman knows how to handle the implement.

There are various opinions as to the way in which ploughing should be done, or rather the way in which the furrow slices are to be formed and finished off; some advocating high-crested or high-shouldered slices—that is, with the edge farthest from the land well squeezed up, as it were, higher than the rest of the furrow slice—while others are in favour of a furrow slice perfectly rectangular in form. These are the two forms of furrow slices in use, and are obtained partly by the mould board of the plough, and partly by the way in which it is adjusted or tempered by the ploughman. Again, the mechanical condition of the soil of the furrow slice differs according to the views held by the farmer as to the way in which this soil should be left. Some years ago what was almost universally, and is still largely considered as the "crack style" of ploughing, was a furrow with the soil formed and compressed into a rectangular slice having a smooth, unbroken surface. This, however, is now very much modified; for many—and these are perhaps amongst the most advanced farmers of the present day—believe that what is wanted is a soil that is not compressed, or which has its pores closed, but one free and comparatively loose. The atmospheric influences thus obtain admission to the whole interior surface of the turned-over soil, so as to reduce it as quickly and completely as possible to the state of pulverised tilth. It is right to state that this latter view is decidedly more in accordance with the requirements of

the soil, as shown by the researches of scientific men, than its opposite.

Of course, in any one of these styles of ploughing, it is scarcely necessary to say that the ploughman must be capable of executing his work, so that all the furrows shall lay straight in the right direction, parallel to one another—furrow slices as crooked as a "dog's hind leg," as the saying is, not being tolerated. The plough should be tempered or adjusted so that the furrow may be turned over cleanly and methodically at the same angle, and at the same depth, the weeds thoroughly covered in, and with the soil evenly and uniformly cut. The master may be fairly well satisfied if the ploughman fulfils all these conditions efficiently. The extent of land ploughed per day will vary according to circumstances, the kind and quality of the land, and the condition in which it is at the time. An average of one and a quarter acres of grass land or lea may be ploughed in a working day of ten hours, with two horses. In stubble land the quantity will be increased from one and a quarter to one and a third. *French ploughing*, with three horses and a man, one acre a day; subsoil ploughing, on heavy soils, four men and two horses being employed, three-fourths of an acre; on ordinary soils and on light soils, with three horses only, one acre.

Digging.—Although spade husbandry belongs more properly to small farm management work, and is rarely introduced nowadays on large farms, still even on these instances of digging, or rather forking, stubble lands preparatory to the taking off green crops from them, have been so successful and numerous that perhaps some of our readers may be induced to try, if they do not regularly adopt the practice. The work is

generally contracted for at so much per rod or acre. The time occupied in doing it varies, of course, with the character of the soil and the time at which it is performed; light soils, for example, being more easily dug, as a rule, early in autumn than later, or during winter, and still more easily in spring than in the latter season, the reverse being the case with heavy clay soils. The time taken is also regulated by the condition of the soil, it being harder to dig when saturated with wet, while the result is infinitely less satisfactory; indeed, if good crops are desired, land should neither be dug nor ploughed in this state, as it is almost impossible to obtain the proper tilth necessary, although it is more easily secured by digging than by ploughing. Digging can be done to the depth of nine to twelve inches, in ordinary soil, to the extent of a statute acre, in from two and a half to three weeks. Grass land to the same extent will take nearly a month. Second diggings in spring are, of course, more quickly done.

Where land is trenched two spits deep, the work is, of course, very much increased in cost. It is usually estimated for by the square rod or perch. Digging and trenching both require to be carefully looked after, as some men are exceedingly careless in these two classes of work. If space permitted we could say much on the subject of digging, respecting which great ignorance prevails, even amongst those who profess to be good at the work. In farm land the same precision in digging can scarcely be expected, so that the most effective work shall be done with the least labour, as is necessary and should be secured in the case of garden work. Still, as the latter is confessedly the best way in which to prepare soil for any crop, it will be ad-

visable to approach the standard of garden digging as closely as possible. The spits as regards depth should be cleanly and uniformly taken as the work goes on; and if done in autumn or early winter, it should be left in a rough surface condition, so that the atmospheric influences, frost, &c., acting throughout the winter, may crumble and pulverise the dug portion by gaining admission to the pores of the soil, and thus securing a good tilth in spring. Although it will, of course, add considerably to the cost of the work, as more time will be required for doing it, we strongly believe that it would ultimately pay better to take out, while digging, the roots of weeds, especially of those which are perennial, rather than to cover them up with soil at each successive spit. It is needless to say that land cannot possibly be too free from these weeds; in fact, half the after-work of cultivation, if indeed it be not one of the most important parts of it, consists in getting land thoroughly clean. Even gardeners are often careless as to the way in which they cover up the weeds which they should take out as they go along, believing that if they are once buried they will die; whereas the very stirring and cutting they have received make them start with fresher vigour, so that in a few weeks, the weather being favourable, the land will be covered with a profusion of vegetation of the worst character. In digging as in trenching land it is best to take certain portions only at a time, laying the surface out in plots; and in trenching, some little care will have to be given to this and to setting the workmen. Usually the best way to *trench* is to have two men, or a man and a stout lad. In the first-dug trench, which may vary in depth from six to eight inches, the deepest being best, and

averaging about two feet or so in width, one of the labourers should follow and dig the subsoil to the depth of ten inches with the trenching-spade; the other man, meanwhile, cutting a new trench with an ordinary spade, and throwing over the soil as he proceeds on the top of the stirred or dug subsoil of the first trench. The subsoiler, so to call him, should then begin on this new top-dug trench, and subsoil it also, to the depth of ten inches, while his neighbour commences a new top trench, dug with the ordinary spade to the depth above stated—thus, in the case of the first trench, stirring the soil to a depth of eight inches, or eighteen inches in all. In trenching some land, stones to a considerable number are found; these should be taken out, as they will be useful for many purposes, as drain filling, &c. As this removal is extra work, the men trenching are paid at so much a lineal rod or chain. The collection of the stones, which are laid by the diggers at the side of the trench as they go along, and the conveying of them to the place required, are done by another set of labourers, who are also paid by the same standard of the lineal rod, or by the load. If the stones are large, and require to be broken, that operation is done by another labourer or labourers—the standard being, in this case, so much per cubic yard. In trenching new land, draining is usually carried out at the same time, the stones being taken to fill the drains as far as they will go.

Grubbing stubble land with four horses and with Coleman's or Bentall's implement, 3 acres a day may be accomplished; grubbing after ploughing, 4 acres in a day.

Rolling, with an ordinary 5-foot roller and one horse, 6 acres in the ten hours. Clod crushing on heavy

rough land, with three horses, from $4\frac{1}{2}$ to 5 acres. Other estimates give a much higher average. A 2-horse 6-foot roller will go over 12 acres of ordinary land in twelve hours, and 10 acres if rough.

Harrowing.—Harrows taking in a width of land of 7 or 8 feet will, with a couple of horses, do from 10 to 12 acres a day of ten hours, although much will depend upon the quality and condition of the soil. If two bouts of the harrow be taken, the first crossing the line of the second, rather more than half of the above acreage will be done in the day, the soil of the second harrowing being, of course, lighter than that gone over by the first. These three last-named operations are paid for at so much per acre.

Hoeing is another work which may be given out by the piece; but unless special attention is paid by the overlooker or ganger to the quality of the work done, we should be inclined to put it within the class of day work or weekly wage. This is more especially applicable to the *singling* of turnips, mangold, beet-root, &c., which we should rarely think of having done by task work, the opportunity for scamping being almost too great to be resisted by many workpeople. And, as our readers know, it is essential to the securing of good crops that only one plant should be left in the soil at proper intervals. Where two or more plants are allowed to grow together, none of them will be fully and properly developed, but twisted or contorted, and small produce will be the result. Roots of this kind generally yield flesh of a hard, woody, or diseased nature, rarely of first-rate quality. Should task work be preferred to day work, hoeing and singling will be best if paid for by the drill, instead of by the acre, as the number of drills can easily be counted and paid

for accordingly, so many being given out to each worker, and thus avoiding all the trouble of measuring. It may be objected to the system here recommended of having the above classes of work done by day wages, that "scamping" is as likely to be carried out with it as in the task or piece-work system. We do not think so, however; for even if the workpeople are disposed to be lazy on day wages, they have just as much reason to do well as to do ill, whatever amount they actually do, they being wholly free from the temptation afforded by piece work to get through as much as possible in a given time, irrespective of how it is done. But, in both cases, supervision must be given to the work, unless such a rivalry could be established between the workers, that each would aim at not only doing much, but doing it in every respect well. This, however, we fear can scarcely be expected under the present aspect of labour, although, as if to prove that it can be done—which in truth requires no proof—instances have been known in which this honest and pleasant rivalry has been kept up.

Haymaking.—The work of this department is paid by the standard of so much per acre. Since the introduction of mowing-machines, hand-mowing has greatly decreased, although it is still practised in many districts, and probably will continue to be for some time. The extent of meadow land mowed per working day of ten hours by a man varies, according to circumstances, from one, one and a quarter, to one and a half acres. Clover is cut, as a rule, more easily than meadow grass, and therefore a larger extent is averaged. A great deal depends, of course, upon the mower, one being more expert than another; indeed, strange as the statement may seem, some who lay themselves out for

the work do not know what mowing really is—at least, they do not know how to do it so as to perform the maximum of work with the minimum of bodily exertion. It will be instructive to those who are learning to mow to watch a field of mowers, and to note carefully the difference between the mere bodily action of good mowers and bad ones. More will be learned by doing this, and following it up immediately by a considerable length of practice, than by reading pages of instruction. Although the proverb that "a bad mower has never a good scythe" has a moral, and carries a lesson with it, yet many a good mower is provided with a bad scythe, or with one only, with which he has to work on all kinds of ground and crops, no matter whether he be tall or the reverse. Now a scythe set, and of such dimensions as to enable the mower to do good work on level ground, will not be suitable for land broken up into inequalities, or covered here and there with stones. For the former case a longer and straighter scythe is better than a short and curved one, which is best adapted for land of the latter quality. The mere length, shape, and weight of the handle exercise an important influence on the ease with which the scythe is worked; so, also, does the way in which the blade is attached to it. While long and thin enough to possess a certain degree of elasticity, it should still retain a sufficient amount of firmness, while a loosely attached blade will never produce good work. So well known to good mowers are these and other points that they generally carry their own scythes with them, and allow no one to interfere with their adjustment. As mowing constitutes almost the heaviest labour done on the farm, young mowers should be careful not to make efforts to keep up with older and more experienced

hands, as they will not only do bad work, but seriously injure themselves; while their labour may be considerably lightened, and more work accomplished, by rising very early and commencing before the sun gets too strong. The grass, moreover, being then moist with the dew, is in the best condition for being easily cut. As the work is done better by men mowing in company, which they greatly prefer, the best arrangement will be to dispose the old and experienced mowers in one part of the field, and the young and less clever in another part. It may be said that mowing-machines are now so completely supplanting manual labour, that it will be of little use to give remarks in connection with the latter; but it should be remembered that there are a great number of small farms throughout the country where machines are not used, nor likely to be for a length of time, and many of these are so isolated that if their owners were willing to hire a machine, or join in the purchase of one with neighbours, it would not be practicable. Even in the case of large farms hand-mowing is often required, and an agricultural labourer's education can scarcely be said to be complete without a knowledge of the art—for such it really is. Moreover, a machine may suddenly break totally down, when the farmer will be only too glad to put in a row of good mowers "to cut their sounding way" till the machine is repaired, if that can be done; if not, the value of hand-mowing will then at least be appreciated by him.

Economy of Time secured by disposing the Men properly to do their Work, in the Field as well as in the Buildings.—The disposition of men in haymaking, when done by hand, is a point of great importance, but one which is often overlooked. We have seen the workers so

disposed that they were actually in the way of one another. Again, at haymaking time farmers, being anxious to push on with the work during fine weather, employ extra hands in large numbers. This is not always judiciously done, too many being engaged, so that they hinder rather than promote the quickness of the work. Further, many men and women, especially in the neighbourhood of towns, are hired who, professing to understand the process, are totally ignorant of it. We have frequently seen one set of tedders very industriously undoing the work which the preceding set had done. Such mistakes are, of course, the fault of the overlooker; but they show the necessity of the master seeing that the overlooker himself really does his work—or, at all events, is impressed with the necessity of doing it. First, as to the mowers. These may either be so disposed on the field that a number can work in a line, or *en échelon*, one in advance of the other, but all going forward. In the former arrangement the mowers are very apt to interfere with each other's work, as it is almost impossible for them to labour together unitedly, either as regards a given number of strokes in a certain time, or the breadth of the swing or cut; and when pressing closely on each other under such circumstances, the mistake of one throws all the rest out, while it is not easy to name with whom the blame rests. The difficulty is worse in the mowing of corn which is to be sheaved for threshing, and regularly stacked on the field; still, it is bad enough in the case of grass growing. The better way is to portion out the fields in lots or breadths, so that each man has his own breadth, and the advantage of having the benefit of the full breadth of the swath—men varying in this—which they

can take. Again, the work is more easily overlooked. The advantage is still greater in the case of corn-mowing, especially when the corn is laid, as it can be cut with the least damage to it. As to windrowing, tedding, setting up in foot-coils, or small heaps, collecting these and forming the large cocks, and even filling the carts when the hay is ready for removal, all are paid at so much per acre, with the exception of the last, which is paid by the load. Economy of time, which is the grand element in haymaking, is obviously materially improved by the way in which the workers are disposed in the field. In tedding, for example, where the "windrows" are pretty close to each other, and two tedders are employed, one set should begin at one end of the field, and the other at another, so that they will only cross at one point, instead of being perpetually in one another's way by starting at the same end of the contiguous rows. A better disposition still would be starting the two sets at the opposite sides of the lines of windrows, and working gradually towards the centre of the field or plot. The same remarks apply to the disposition of the men in turning over the windrows with the hand-rakes, as well as in collecting them into small foot-coils or large cocks. We note these points, which many will think very trifling, as indicative of the importance of attending to little things, a principle just as applicable to more important concerns, which are much more likely to be neglected if one gets into the habit of being careless as to the former—a principle which is well put in the proverb, "Take care of the pence, and the shillings and pounds will take care of themselves," and the lesson of which is worth bearing in mind in the conduct of all work of the farm, no matter of what class it

may be. Where machines are used for haymaking there are certain points to be attended to, to get the most work out of them with the least expenditure of time and labour. The nature of these may be gathered from what we have already said. The advantage of machine working, in addition to the rapidity with which it cuts the grass, teds, &c., is that it collects them, and also gets rid of the many operations demanded by hand haymaking.

Sowing the Seeds of Crops: Corn or Cereals.—This work is done in three ways—broadcasting, drilling, or dibbling—and all are paid for at the rate of so much per acre. Broadcasting, which is the quickest but worst way of sowing, is rapidly, and for good reasons, going out of use. It is done in varying extents, according to the ability of the workmen. Some are remarkably clever in distributing the seed over the surface, first as regards the quantity on a given space, and second the breadth of this—the two points in the operation; but a fair average is from fifteen to eighteen acres a day. The broadcasters are provided by a lad with the corn, which is laid out in bags at appropriate places on the field, the carting being paid at so much per load. *Drilling* is done at the rate of from eight to ten acres per day, according to the nature and condition of the soil, which regulates the number of horses required, two being the average, and three the maximum. *Dibbling* work is also regulated by the condition of the soil, but from a third to half an acre per day is the average. Dibbling requires to be well overlooked when done by hand, as there are fine opportunities for scamping the work. The rate at which the operation may be performed is also influenced by the distance between the pockets, or holes in the drills

or lines. These remarks likewise apply to the dibbling of beans, mangold-wurzel, &c. The sowing of grass seeds is done generally by a sowing-barrow, drawn by a man, to the extent of one and three-quarters to two acres a day.

In concluding this chapter on the various departments of piece work, we may again draw attention to the importance of having all agreements for work to be done committed to writing. This practice will save many disputes, with all their concomitant jealousies and heart-burnings. When the job is of no great extent the conditions may be merely put in the form of a note or memorandum, with the signature of the overseer and that of one of the men as representing the whole of them. On large farms it will pay to have a book of what may be called "work notes," which, when filled up, should be torn out and given to the workmen, leaving a "counterfoil," on which the terms are written, to be retained by the overseer.

The following is a specimen of a contract for planting a field with beet-root or turnips, which we take from a practical paper in a leading journal:—

"To fill and spread the muck-hill, for the sum of , and when the plant is ready, to hoe the same three times if necessary, for the sum of per acre, and to do the work in a proper and workmanlike manner; the farmer on his side undertakes to do horse-hoeing, or pay for the same being done well as many times as the field is hoed by hands."

The next agreement is the hiring of a labourer, who is to look after four horses and do the farm work, being paid as under:—"When by the day, at the usual wage paid to other able-bodied men upon the farm; to do the ploughing at an acre; scarifying and

cross harrowing (four horses), per acre; harrowing (light and heavy), per score acres; subsoiling ridges with grubber, per acre; Cambridge rolling, per acre; heavy iron rolling, per acre; splitting down ridges with single plough, per acre. The said C. D. to occupy a cottage and give up possession thereof when he ceases to work for the said W. M., and to have one shilling per week for overtime and Sunday attendance upon horses and stable work. During harvest to have the same money as other men upon the farm."

CHAPTER IV.

ECONOMICAL USE OF THE APPLIANCES OF THE FARM —STOKING OF STEAM-ENGINE BOILER FURNACES— CARE OF THE STEAM-ENGINE—USE OF THE IMPLEMENTS AND MACHINES OF THE FARM.

A VERY important part of the work of the labourer on the farm, and one which we regret to say he is too frequently allowed by the master to be very indifferent about, is the care of its implements and machines. It is difficult to account for the indifference with which so many masters treat this department of farm economics, an indifference which often amounts to absolute neglect. We have only to consider the number of the implements now employed on well-regulated farms, and the very large sums which several of the more important machines cost, to see that this department cannot possibly be treated with such indifference without involving great loss to the farmer. Take, for example, the field implements: these, on many farms, after being used, are almost invariably allowed to lie at the side of a ditch or fence the whole of the time intervening between one season and another. True some, such as the drilling machines, are taken up to the steading; but there they are little better treated than if left in the field, being allowed to stand in the open yard for months. Even in the case of the much more expensive steam-engine or threshing machinery the

same bad treatment is too often followed. The result of this is the rapid deterioration of their various parts, and the consequent necessity for repairs. Now these repairs, being done at an earlier time than would have otherwise been required, are equivalent to the loss of a large portion of the best period of what may be called the working life of the machines. Besides, a repaired machine is less valuable than one in which the parts are in their original state of efficiency.

In rural districts, moreover, repairs are likely to be done much less accurately than by the original maker, with all his fine appliances, and, as it may be presumed, greater knowledge of the machines, and skill in their construction. Successive repairs, therefore, are necessitated, of all of which we may add, what farmers apparently seldom think of, that they are very costly; and if, to save these, the machines are used when out of order, the work is not only badly done, but less in quantity. Neglect, then, of this important department obviously brings with it a series of costly losses which, added to the capital sunk in their original purchase, present inducements enough, one would reasonably suppose, for the farmer to allow it to exist no longer.

In connection with the field implements and machines of the farm there are two points to which we wish to draw the attention of our readers. The first of these is, when they are done with, to have them *placed orderly in the implement shed in good working condition.* Many implements, as farmers know to their cost, frequently break down when in use. And when a break-down happens, if the implement be not left in the field, it is ordered to be taken to the farmyard, or to the implement shed, a convenience with which every farm should be supplied. But, instead of having the break-

down made good, the implement is frequently left in the yard or shed in the useless condition in which it quitted the field. And there it is too often allowed to lie till the next season, when, to the annoyance of the farmer, who has probably forgotten all about it, on being required, it is found to be incapable of use. Now this as a rule is what happens in ill-regulated farms, and one may judge, therefore, of the loss of time and money occasioned by the implements having to be sent to the village mechanic for *immediate* repairs. Most likely these repairs cannot be done at once, not only because it is the busy season, but because the mechanic will probably be overcrowded with work of the same character, and brought about by the same causes. Thus it may happen that extra time is lost, and the getting in of a crop at the proper period may be jeopardised, in addition to the extra expense involved. Now all this might have been saved by adopting the sensible and simple plan of having the repairs done to all machines and implements requiring them before they were finally housed in the implement shed for the next season. They would thus be found in proper condition when they had work to do. Even when machines and implements are apparently in a sound condition they should be thoroughly overhauled before being put up in the shed; for it often happens that a part or parts may have been so strained, or become so worn out, that when put to work in the succeeding season a break-down may immediately take place. The overhauling, then, of each machine or implement before being put up in the shed, to ascertain the condition of its various parts, may save much, both in time and money, as it will enable any unsound or weak part to be discovered at a time when repairs can

be most quickly and cheaply done. It ought to be sent at once to the mechanic to be repaired forthwith, and, on its return to the steading, be put up in the shed till the following season.

Reverting to the point at which we started, that this department is an important one for the labourer to look after, we shall devote a few sentences to show how that can be best done. We commence, then, with the most valuable or costly of the farm machinery, the steam-engine. Of this it may be said, that from its parts being more or less complicated, and all possessing the finest possible adjustment to one another, working, moreover, with a power involving so many dangers, the labourer can scarcely be expected to learn much and do much about it. But, as we have already pointed out in another part of our work, the power of exercising thought and the possession of habits of observation are each of great value to the labourer *per se*. By these, together with the possession of a fair memory, he will be surprised to find how comparatively easy it will be for him not only to understand enough even of such a complicated piece of machinery as a steam-engine, and so dangerous an adjunct as its boiler, to enable him to work them efficiently, but likewise to rearrange such parts as from time to time may get out of their proper adjustment.

In working the steam-engine considerable economy will be secured by the way in which the boiler furnace is fired. In few appliances in use is the relative value of good and bad styles of working more observable than in the stoking of the steam-engine boiler furnace. Some men will keep steam up at a uniform pressure and for a long period with the greatest ease, and with an expenditure of fuel very much less than that re-

quired by another who cannot maintain the steam at a sufficient pressure to work the engine steadily for any lengthened period. The great secret of stoking economically is, first, to have the fuel as uniform in size as possible, the size known by the name of "nuts," or smallish pieces, being the best. The next point is to fire frequently and thinly; that is, the coals should be distributed in a thin stratum over the surface of the furnace bars, this stratum being of uniform thickness, and evenly laid over the whole surface of the bars; the only exception to this uniform firing being, after the furnace has been fired for some time, the formation and keeping up of a regular bank of red-hot fuel immediately in front of the bridge of the furnace. This bridge is the transverse wall of brick running across the back end of the furnace, but which stops short of the boiler bottom, leaving an open space for the smoke, &c., to pass from the furnace to the chimney flue. The object of this bank of red-hot fuel is to cause the smoke and gases issuing from the fresh fuel put on in front to burst into flame as they pass over it—in other words, to consume the smoke, as the popular phrase is. But, in truth, there will be very little smoke to consume if the furnace be stoked in the way we have recommended. The chief cause of the huge volumes of smoke seen issuing from boiler chimneys is bad stoking, this being generally done by throwing on at long intervals large supplies of coal, which form a thick stratum, and generally a high bank near the furnace door. This system is sure to produce volumes of smoke, with little or no surface of clear burning fuel behind by which the smoke can be flashed into flame. When furnaces are stoked in this way, the frequent, or at least violent and rough use of the fire-

irons is necessitated as the steam goes down, as the stoker feels that some bright flame and burning fuel are needed to bring it up to its pressure. This process invariably wastes fuel by forcing the fire, as well as causing considerable portions to pass through the furnace bars unconsumed to the ash-pit. A good stoker requires the use of the stoking-irons very seldom, and chiefly at intervals to remove clinkers only. The master does not need any other evidence that bad stoking, and consequent waste of fuel, are going on, than the issue of huge volumes of black smoke from the chimney. Another sign of irregular stoking is the occasional, and indeed, with a very careless man, the frequent blowing off of steam at the safety-valve, showing an excess of steam. Another is the engine failing to keep up its speed, which betokens a deficiency. The results of both are equally bad and wasteful. The stoker should look to the state of his pressure-gauge and water-gauge very frequently.

It is scarcely necessary to say that the workman, in attending to the general machinery of the farm, must bear in mind the fact that he is dealing with aids or appliances which, however strong they appear to be, are in reality delicate in so far that their adjustments are liable to become more or less easily disarranged; and that when disarrangement is caused, serious accidents, sometimes leading to loss of life or personal injury, may be the result. Inattention on the part of the workman may at any moment cause an accident which may cost his master many a pound. The case is worse when this is the result of gross neglect. We have known some men retire into an obscure corner to enjoy their pipe or read a newspaper, leaving the steam-engine, and its still more dangerous

companion the boiler, to work their will. This neglect is bad enough in the case of farmsteading machinery, where the work is pretty uniform as regards the strain it throws upon the engine; but it is much worse when the steam-engine is employed in ploughing or grubbing up soils. These operations constantly vary in character; strains are thus thrown more or less suddenly upon the engine, which demand constant and conscientious attendance upon it to prevent its "running away." These considerations obviously affect the economical working of this department, as, when neglected, most expensive accidents may happen. They also indicate to the master how prudent he should be in seeing that he employs for this work none but what may be called the highest class of farm workmen, upon whom he can rely for steadiness and conscientious carefulness. In view of the increased and increasing use of steam machinery on the farm, some go the length of insisting that it is the duty of the farmer to employ teetotalers, as being more likely to secure its safe working. This, however, the farmer must decide for himself. Certain it is that farming is now carried on in a way so vastly different from that of former times, that, if not the highest class of labour, at least a higher should be employed to look after the mechanical department than is often done. To aid in this we would therefore suggest that it might be a good plan for the farmer, when he either knows or should have in his employ young lads who give evidence of superior abilities, and specially of mechanical "likings," to pay them some attention: to assist them, for example, in getting a superior education, and to train them up while on the farm—if they be at work thereon—by a gradual process, to look

after and superintend the various machines. Such slight labour and expense as this may involve will be well repaid by his having in time young men capable of undertaking the sole management of this department of the farm in such a way that the costly accidents almost daily resulting on farms of the present time, through the employment of careless and incompetent men, will be avoided. This is one direction in which the difficulty of getting intelligent labourers, alluded to in our first chapter, may be wholly or at least greatly overcome.

In some instances the repairs necessitated may be so simple as to be done at the farmsteading. To aid in work of this sort, a smithy and a carpenter's shop should form part of it. Generally speaking there will be some men on the farm possessing sufficient mechanical knowledge to be able to use simple tools for simple repairs. The best man of this class should have the care of the boiler, steam-engine, and general machinery, and also the implement shed. All polished parts of machines which are set aside or not working should be covered with a mixture of white-lead and grease to prevent rust, and any paint which may have got rubbed or worn off other portions should be renewed. All journals and moving joints should be cleaned from adhering dust and claggy oil; in fact, the whole parts got into clean and good order before any machine or implement is stowed away until its season of use comes round. The same care should be extended, it is needless to say, to the fixed machinery of the steading. The precautions which we have recommended in the implemental department of the farm will be amply repaid in the time saved by each machine being always maintained in the best working condition. So, also,

will needless expenditure in repairs be avoided by having these done in ample time before the working season returns, instead of in a hurry—for hastily done work is always dear—and perhaps not done at all till a part of the season be lost—another and still more costly item of expenditure.

CHAPTER V.

ECONOMICAL MANAGEMENT AND USE OF THE MATERIALS EMPLOYED ON, AND OBTAINED FROM, THE PRODUCE AND RESOURCES OF THE FARM.

We have already offered some remarks upon the importance of the master seeing that no time be lost in the various operations of farm work. It is of no less importance that he should see that there be no waste of materials. There are, unfortunately, too many opportunities and outlets on the farm for this waste being carried on, and the larger this is the greater their number. The first and most obvious direction in which waste may arise is in the feeding materials of the live stock. This waste may be effected in a variety of ways, almost too numerous for notice in our limited space. Confining ourselves to one or two, we take first that waste which is very often caused by carelessness on the part of the master, in giving the servants unlimited control over the supplies of the various materials used. It is too frequently a characteristic of the serving class, that when they have the command of large bulks of any material—especially if in daily use—they avail themselves of it in such a way as if they thought there would be no end to the supply, and the greater this happens to be, the greater the waste. To prevent this thoughtless expenditure, all the feeding materials of the more expensive

kind, such as artificial foods, linseed, oil-cake, &c., should be carefully stored in an apartment specially allotted to the purpose. From this store the foreman, or bailiff should only give out from time to time supplies sufficient to furnish a certain number of live stock with the proper and regulated quantity for a definite period, according to the system of feeding adopted. This involves the necessity of doing what we have pointed out elsewhere as requisite, namely, deciding, as the result of observation or experience may dictate, what ought to be the daily rations of the stock. Of course allowances must be made for particular circumstances, but an intelligent overseer will soon learn how and when to make and use them. This system should not, however, have the effect which it sometimes has, namely, that of stinting the animal in order to effect a very pointed saving. Animals, like ourselves, have varying appetites according to circumstances; but there are always one or two feeding substances which it may be best to give *ad lib.*, such as straw or roots, and these will enable the animal to make up in some measure for any deficiencies in the supply of the more valuable substances, such as oil-cake, meals, and the like. But true feeding is never conducted in this hap-hazard style; every detail is carefully thought over, its effects observed, and the practice altered or modified accordingly. Another way in which food can be, and often is, wasted is by giving the animals too much at a time. In this case, their appetites becoming palled towards the end of the meal, they begin to toss and tumble the materials about, breathe upon and salivate them. This food, so treated, they will not again touch, so that it is simply wasted, and generally turned into the manure heap.

Where cattle are stall-fed, and in summer supplied with green-cut forage food, it is essential, if economy is to be studied, to supply the animals only with what they will eat clean up, as, for the reasons just stated, green food is rendered very distasteful to them. Attention to this is what all true feeders should do their best to consider. As the appetite of animals varies, a little time will need to be devoted to note how much they require or will eat with a relish. An experienced hand will know at once when they have had enough. When they begin to toss their forage about and snort over it, the supply should cease. If mashes form part of the feeding system, careful supervision should be given to the labourers when preparing them. Many a copper or boiler full of good food is utterly wasted by direct carelessness on the part of the attendant. This may be shown in more ways than one, as, for example, by over-firing and putting too small a supply of water, either scorching or imparting such a flavour to the food that the animal will not eat it. Waste also is indicated by a carelessness as to the condition of the vessels in which the foods are prepared and given, these being often so dirty that flavours of such a character are imparted to the materials as to cause the animals to reject them altogether, or to leave a portion unconsumed. All these points, although apparently very simple, and what many would not hesitate to consider quite unworthy the attention of what they would call a "sensible fellow," are nevertheless of such importance that if neglected considerable loss at the end of the feeding season will be the result. We have known instances in which, by careful attention to such small points on the part of the attendant, a greater number of stock has been kept with a certain

amount of food, as compared with that of another on the same farm who was careless on the points named.

Waste, however, does not refer to food materials alone; it will be necessary for the farmer to impress upon his labourers the importance of attending to the saving of other materials on the farm. Here, again, a wide field is open for care and observation on the part of those who have its management. Take, for example, materials useful as fertilisers. There is scarcely a farm in the kingdom but what, in odd corners and in various out-of-the-way places, there are collections of materials which, if gathered together, would go far towards the formation of a compost heap or heaps. These materials have frequently been the accumulation of years, addition after addition being made without any thought as to their value. An excuse may be made for their neglect in the fact that they are lying in places not so easily observed, although search ought to be made for them everywhere. But the same cannot be said of a vast variety of materials which are too often allowed to lie at the sides of roads daily frequented; or, worse still, in the immediate vicinity of farm buildings. If all these materials were collected, they would pay handsomely for the labour, and would materially add to the careful order of the farm and its buildings. That we are not writing on a subject of trifling importance would soon be made clear to those who think it is so, if they would but begin to clear away and use up what may be called the rubbish of the farm. We feel assured that if they once adopted the plan, they would be surprised to find how largely these fertilising materials abounded. There is nothing, indeed, of an organic nature but what is

Division II.

THE LIVE STOCK OF THE FARM.

CHAPTER I.

WORK CONNECTED WITH HORSE LABOUR.

From the important work which horses have to perform on the farm, as well as their being the animals which on an average cost the most money, their general management and feeding constitute one of the most important departments connected with farming. There are two ways in which horses may be attended to. In the first plan the ploughman may simply have the conduct of outdoor work, as ploughing, &c.; all the indoor work, as feeding, cleaning out the stable, looking after the harness, &c., being done by a stableman. The latter generally has a boy to assist him as a kind of apprentice, who is ultimately appointed to the higher post, and who is therefore regularly trained to the indoor work of the stable. In the second system the ploughman — and this practice may be said to prevail throughout Scotland—has the whole charge of a pair of horses, including not merely their work in the field, but also their grooming and feeding in the stable, the cleaning out of the latter, and looking after the harness—everything, in fact, being done by him.

The hours of work vary according to different districts and the ideas of the overlooker or master. As a rule the working day is ten hours. This obtains almost universally in the northern part of the kingdom. In some other districts it is nine, while in others it is only eight hours. These hours refer exclusively to the period in which the horses are at work, the time given by the ploughman in the second of the above-named plans being extra; indeed, the actual day often consists of fourteen hours, beginning at five in the morning and finishing at seven, and often later than that. We have a strong opinion that this length of working day far exceeds what ought to be demanded from a man, besides operating against the best interests of the master. In other industrial callings the experience of many years has proved beyond a doubt that more work, and that of a higher class, is produced in a short day than in a long one. It requires but little knowledge of men and their constitution to prove that this is likely to be the case, they working with a will when their faculties are in full vigour, but "lagging and flagging" when these are overstrained. It is true that in the second of the above plans, or what may be called the northern system, an interval of two hours in the middle of the day is nominally given to the men, but in reality part of this time is occupied in feeding and attending to the horses. Further on will be found a detailed statement of what usually forms the day's work of the ploughman, apart from the really higher points—his social and moral well-being. When a man begins his day at four o'clock in the morning—for a northern ploughman who has to be in the stable at half-past four, or even five o'clock, must get up at four, or half-past at the very latest—and

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ends it at seven, and sometimes, in wet or cold weather, nearer eight, he has very little time left for the social enjoyment of his home, &c.; and as for intellectual improvement, that is entirely out of the question. Even as regards the horses too, especially in the busy parts of the season, when they have to work day after day for a considerable period, we believe that a shorter day, by inflicting a less severe strain upon their systems, would have a beneficial effect, and therefore be a saving to the master.

It should be remembered that, so far as the ploughman is concerned, he has not only got to sustain the fatigue of physical labour, but also, if he be a conscientious man, much mental thought and anxiety concerning his horses. This is greatly increased if the system under which he works throws upon him the additional labour of grooming and feeding the horses, and keeping their stable in the thoroughly clean and orderly condition which their health demands.

With these preliminary remarks we now turn to the actual labours of the stable. Here, as in other departments, the value of system and order will be clearly seen. The preparation of food (which involves its collection and putting together), the giving of it to the horses, the cleaning of the stable, and the looking to and making small repairs in the harness when necessary, should all be done in regular sequence and at duly appointed times. First, as to the

Feeding of Horses.

Various systems of feeding are in vogue throughout the country, some using one class of materials, while others favour another. What may be called the staple or general food consists of hay and grain—

generally oats and beans—to which are frequently added in winter warm mashes of turnips. By many feeders, however, turnips are by no means considered proper food for horses, especially when raw, in which state they seldom give them. If given at all, it is in the form of a warmish or cooked mass, as just stated. Some largely make up the food with green or cut forage plants, and in the busy season a daily feed of hard grain, generally oats, but sometimes beans and maize, with another of hay in small quantity. Of the roots, carrots are unmistakably the best for horses, and yet few comparatively use them. Why it is difficult to say, as they are highly nutritive and strength-supporting, and act, there is every reason to believe, wondrously on the animals. Oats have a place in every system, the only exception being occasional feeds of maize, by way of change. In summer-time, when not working, the horses are turned into pasture.

To insure due order in feeding management, the weight of substances used per day should be got ready, so that no time be lost. As an example of the rations of a horse per *week* in the winter season Professor Lowe gives in his "Elements of Agriculture" the following:—Of hay and straw, 56 lbs., both being cut into chaff; 56 lbs. of potatoes, mashed or cooked; and of oats, bruised, 56 lbs. In the "Book of the Farm" Mr. Stephens names, as his system of feeding, 112 lbs. of hay, the same of turnips, and of oats 35 lbs. only. The reader desirous of seeing a list of twenty-three systems will find it in Mr. J. Chalmers Morton's "Farmer's Calendar," whence we take one from which hay is excluded:—Oats, 84 lbs.; beans, 14 lbs.; barley, 14 lbs.; straw, taking the place of hay, *ad libitum;* and of roots as much as 336 lbs. In another, in which

hay is also omitted, and carrots are given to the extent of 350 lbs. per week, the oats are 126 lbs., and straw *ad libitum*, all in their natural conditions. During winter, when hay forms part of the system of feeding, it may be much economized by giving about 2½ bushels a day of bruised gorse, which is a healthy and excellent food; this quantity being produced from 2 to 2½ of the bundles or faggots in which the cut gorse is made. A faggot weighs from 15 to 20 lbs., and a man can cut a hundred faggots in a day. The weight of gorse depends upon the way the cutting is done, whether by hand or by machine; but the daily allowance may be prepared by machinery in a very short time. Much of the prejudice existing against gorse arises, we suspect, from the careless way in which it is prepared. If not a delicate feeder, the horse is at least a particular and even whimsical one, and one or two sharp prickles may set him against the food for ever. Gorse, however, is really too valuable to permit of its reputation being spoilt by negligent preparation.

Having given some of the systems of feeding horses in winter, we now perform the same office for the spring and summer periods of the year. Taking the spring first, and again quoting Professor Lowe's system, the weekly weight and the substances are as follows:—Hay, 140 lbs.; oats, 73 lbs., both in their natural condition, uncut and unbruised; and potatoes, 20 lbs., mashed or steamed. When green-cut rye is used, hay is given *ad libitum*, half the amount being cut; oats, 42 lbs., in the natural condition; and the green rye *ad libitum*, half being cut. In a system where carrots are given there should be 98 lbs. of oats to 49 lbs. of carrots. Taking now the summer-feeding systems, Professor Lowe gives 35 lbs. of oats, and of

cut clover 1,400 lbs. Another plan consists of 70 lbs. of oats, 28 lbs. of beans in their natural condition, cut clover *ad libitum*, and the horses pastured out all night. Another method is to give half a bushel of beans, a bushel of rice meal, and tares *ad libitum*. In the month of July, when horses have little work to do, the pasture will be sufficient, or, if cut food is given, clover or other forage, such as lucerne, which is a capital food for them, alone will suffice. Still, to keep horses in good condition, ready for the approaching heavy work of machine corn-cutting, &c., occasional feeds of oats or beans should be given them in small quantities. It will be more economical to feed them either in the yards or in the house, as the manure will be of better quality, but twice as short, as in pastures, a very small portion of which is made useful or available, while during this month the grass is often dried up and poor.

Winter, spring, and summer being disposed of, we proceed to give one or two systems of feeding adapted for autumn. Where clovers are available, 37 or 38 lbs. of oats and the same weight of beans may be given weekly, and the clover or other food *ad libitum*; or, the beans being left out, the oats may be increased to about a hundredweight; or, again, the oats may be reduced to half a hundredweight, and hay given to the extent of 1½ cwts. When straw chaff forms a part of the feeding system, it may be made up into a mixture of 26 lbs. with 8 lbs. of oats and 2 lbs. of beans, this being the daily weight; or, in place of straw chaff, equal portions to the same weight of straw chaff above named.

In connection with horse feeding there is considerable diversity of opinion as to whether oats should be

given whole, ground into meal, or merely bruised. Many experiments have been made to test the point, but the most complete was that carried out by M. Renault in the large establishment of the London General Omnibus Company. One half of the enormous number of horses which were kept by that company at the time of the experiment were fed on *bruised* oats and cut hay and straw, and the other half upon whole oats and hay in its natural condition, or uncut. In the first system the daily rations were, bruised oats, 16 lbs.; cut hay, 7½ lbs.; cut straw, 2½ lbs.; and in the other, unbruised oats, 19 lbs.; uncut hay, 13 lbs. By the former method, therefore, a saving of 6 lbs. was effected in the feed of each horse per day; and this not merely in the weight of materials, but in their value, for cheap straw was substituted for dear hay, while the condition of the horses was greatly superior to that of those fed on the other system.

We might quote the results of numerous other experiments tending to prove that bruised oats, while effecting a saving, keep up the condition of the horses better than when unbruised; but we will content ourselves by merely giving two systems of feeding in which bruised oats form a part. First: Hay, cut, 9 lbs.; whole straw, 15 lbs.; bruised oats, 15 lbs.; bruised barley, 9 lbs. Second: 6½ lbs. of cut hay, 13 lbs. of uncut straw, 6½ lbs. of bruised barley, and 11 lbs. of bruised oats. Another system—in which hay is wholly left out, and a mixture of various materials made into a stiffish paste or mash is substituted for it—may be named here as that adopted by the proprietor of a large number of horses:—Cut wheat or oat straw, 4 lbs.; crushed oil-cake, ½ lb.; 1 lb. of barley; 1 lb. of beans; 2 oz. of linseed; ½ oz. of salt. The mixture,

in the above proportions per horse per day, is thus made up:—The cut straw is spread in a large trough to the depth of six inches, and the other materials, made into a liquid with water and boiled, are poured over this; then a fresh layer of cut straw is placed over the liquid stuff, above this another lot of the latter, and so on, layer succeeding layer alternately, until the trough, proportioned in size to the number of horses to be fed, is nearly filled, when the whole of the materials are thoroughly mixed up together and allowed to cool. Of this mixture each horse gets a daily allowance of the weight above named—that is, 6 lbs. 10½ oz., or say 7 lbs.; in addition to which, he gets a bunch of wheat straw and 12 lbs. of bruised oats, mixed with peas, barley, wheat, or beans, and a little salt. We have already referred to carrots as a valuable food, and in one system in which they were largely used, with great success, the weight per day per horse for winter feeding was 5½ lbs., and 2½ lbs. of hay, oats being added to the mixture as the weather improved. When the carrots failed, it was found that the horses were in worse condition on 16 lbs. of oats being substituted. Mr. Mechi's system for summer feeding is as follows:—The horses are manger-fed, and have straw chaff, cut as short as one-eighth of an inch, tares, lucerne, or green rye, cut also in the same length, this material being mixed with ground beans, oats, and linseed. In winter, carrots, swedes, and mangolds are finely cut and mixed with good wheat, bean, or oat-straw chaff, and a little ground beans, barley, or oatmeal, soaked linseed, steamed potatoes, and a small quantity of salt. Mr. Mechi is a great advocate for changes of food, as stimulants to the appetite, and, as we have elsewhere stated,

they have a good influence upon the health of the animal.

These details were necessary to enable the feeder to arrange the weights of the materials required according to the system he determines to adopt, so that no time may be lost from want of due preparation. As in other departments of farming, this work should proceed regularly, like the machinery of a factory; for although in first-class farms steam-power will be more largely used in farm work than at present, much labour must still be done by horses, while on second and third-class farms horse-power will for a long time, if not always, be used. Thus an element of great importance is introduced into this department, namely, keeping machines for the preparation of food in the best working order, and providing for their wear and tear. It will greatly conduce to the economy of this department if as little food as possible be bought, the object being to use home produce.

The usual way of feeding in the winter season, at least on farms in the north, is to give in the morning a feed of light oats; a similar one in the forenoon; at six, on returning from work, a small quantity of turnips, light barley, and straw chaff or corn dust, these being boiled together to form a thickish mass; and before finally bedding up for the night a larger feed of the same materials, with oat straw *ad lib.* In some cases swede turnips are given, or potatoes *ad lib.*, in order to save some of the oats. In the summer-time, the horses, when in full work, should have the same weight of oats as in winter, with cut grass, or other green forage food, substituted for the mash. It is scarcely necessary to say that the plan of turning out horses on poor pasture to pick up a scanty living as best they

may, is quite exploded amongst farmers who wish to keep their horses in good condition.

Grooming and Cleaning of the Horses.—This important part of stable work must on no account be neglected, as we regret to say it too often is, and this from the fact that it involves labour, which, if honestly done, is not only hard, but troublesome and tedious. The master or overlooker, therefore, will require to pay particular attention to this department. It is not always, indeed, the case that the latter is so impressed with the importance of proper grooming as to insist upon its being done efficiently. But it is well that he should be made fully alive to the part it plays in the economy of the horse. It is not enough that the horse should be well bedded and well fed, for the more highly fed he is, and the harder he is worked, the greater is the necessity for good grooming. The healthy action of the secretions, especially those carried on through the medium of the skin, can only be efficiently secured by keeping the pores thoroughly free from dust and adhering dirt. To get rid of this involves a good deal of bodily exercise on the part of the attendant. There are various notions and systems in vogue as to grooming; but the work cannot be far wrong if the coat of the animal exhibits that peculiar condition so difficult to describe, but which every one acquainted with horses well knows. Indeed, so great is the difference in the mere look between a well-groomed and a badly groomed horse, that even the uninitiated at once perceive that something has been done in the one case which has been neglected in the other, although they may not be able to tell what that something is. Grooming, while thoroughly done, should be performed gently and kindly; and where a

brush is used it should not be so hard as to cause the animal pain. If, instead of a brush, an iron curry-comb be employed, it should not be handled in the rough-and-ready way so often seen, by which not only is positive injury done to the animal, but no small degree of pain inflicted, especially by rapping sharply up against joints, &c. Care should be taken at the same time to have the grooming done quickly after the horse comes from work, so that the animal may not be allowed to stand shivering in the cold in winter-time. Many a valuable horse has been ruined by colds thus caught. Let it ever be borne in mind that the horse is a really delicate animal, with a highly nervous temperament. Thorough cleaning of the stalls, and indeed the whole of the stable, is highly conducive to the health of horses, and should not be done in a perfunctory way, but as completely as possible.

The litter or bedding should be of old, but not musty, straw, that of wheat being preferable. If new straw be employed, the animal is apt to eat his litter. The ventilation of the stable should also be examined by the overlooker. The temperature should never be too high, which induces perspiration, and often gives rise to serious complaints by the sudden change from the warm close atmosphere of the stable to the exterior cold, matters being sometimes made worse by the horse being kept waiting outside for dilatory ploughmen to attend to them. The sooner horses are got to their work from the stable the better.

Where washing is necessary, greater care is of course required on the part of the stableman or ploughman than when the weather is fine. Thorough drying is essential, demanding an amount of care and exertion

that is often shirked, and thus giving rise to more or less serious complaints, so that the plan of washing has with some fallen into disrepute. No danger, however, need be apprehended if it be properly carried out, and it only requires to be done in exceptional cases, as when the horse has sweated very much, or has got dirtied and splashed, and the mud hardened. Rubbing down with straw and curry-combing will get rid of the mud, &c., easily enough in ordinary cases. Indeed, one of the advantages of systematic brushing or curry-combing is that it prevents the mud, &c., from adhering closely to the coat of a horse, which it does in a badly groomed, neglected animal. A good sign that the circulation of the blood of a horse is going on well is the warmth of its ears and legs; if this warmth be a little languid, the circulation may be restored by rubbing them with the hands, and then submitting them to a kind of shampooing. It will at once be seen, from these remarks, how important it is to attend to what many consider to be trifles, but which are absolutely essential to the well-being of the animals upon which devolve the most important work of the farm, and which are in themselves costly to purchase and to maintain. Much of their utility may be lost to their proprietor through an act of carelessness, neglect, or indifference, which at the time may have seemed but a trifling matter.

But while the work-horses will absorb the principal part of the time of those connected with the stable, the riding-horses or nags of the farm must not be neglected. In the winter-time, when the work of the farmer's horse is pretty stiff, and also during harvest, they require a little more care and a higher class of feeding than the work-horses. If the farmer be a

wealthy man, and keeps carriage-horses and a hunter or two, if not a small stud of superior animals, still greater care will be required. In this case a groom should be specially told off to fulfil these important duties, while in his spare time he may act as man-servant in the house. Of course it will be necessary for the master to be careful that he employs a man who really knows his work, and to remember that as in the case of cooks, so in that of grooms, many profess to know that of which they are in reality ignorant. In view of this, short engagements should be made, and should the master find out, as he very soon may, that the man has no real knowledge of horses, or is careless and indifferent, he should be got rid of at once. There is little use in attempting to go on under such circumstances, for it should not be forgotten that as large an amount of mischief may be done, and as heavy loss incurred, through the carelessness and indifference of the groom as through ignorance of his duties. Again, a groom may be thoroughly clever, and, when got to work, honest in his performance of it, but nevertheless lazy—for there is a distinction between indifference and laziness—and inclined to shirk his duties whenever he can do so with apparent safety. Now a lazy groom will never be a satisfactory one, for horses require constant attention in little things which cannot be called hard work, but which must yet be done. There are, however, other duties which really demand considerable bodily exertion. Nor should another element in his character be overlooked, namely, *kindliness of disposition.* This point we regard essential, not merely on humane considerations, but on account of the injury which a man of opposite character is sure to do to the valuable animals

intrusted to him. Many a fine-dispositioned horse is rendered vicious by treatment which cannot be called positively cruel, but still may be characterized as irritating, and by the thoughtlessness with which even necessary work is done. All this is highly injurious, especially if long continued. If a groom is found conscientiously doing three things with his horses—feeding them well, grooming them well, and treating them well, that is, kindly—he may be considered a treasure, and should be kept even at some extra cost. The whole subject of the kindly treatment of animals of all classes is so important in a pecuniary sense alone that we have deemed it necessary to devote a special chapter to it, which will be found at the end of this division.

CHAPTER II.

WORK CONNECTED WITH CATTLE FEEDING.

The weight and class of substances given to cattle vary throughout the country according to the opinions of different feeders. Store and fattening stock have straw and turnips as their staple food, the latter receiving an addition of linseed or oil-cake. The weight of roots per day varies from 56 to 84 lbs., and sometimes as much as 112 lbs.; that of linseed from 3 and 4 to 6 lbs.; and the straw *ad libitum*. Straw can be made a more valuable feeding material than it usually is, if given in the form of what is called "chaff"—that is, machine-cut straw—and mixed with roots either sliced or pulped, and meal or oil-cake ground, the weights being as above stated. The number of cattle which can be attended to daily by one man is by some authorities put at as many as 35 or 40 on the stall-fed system; if in the yards, one-third more. But these numbers are far too high for proper attention to be given to the cattle. It is false economy to save money in wages, which form but a small item compared with the deterioration in the condition of the animals. The *weight of straw used for littering cattle* depends very much upon circumstances—some giving too much, others too little, but neither bestowing sufficient thought on the matter, so as to observe what constitutes the actual medium with which the animals

re most comfortable. This of course varies with circumstances, and hence the necessity of continued bservation and attention. From 16 to 20 lbs. per day will, on the average, be a good allowance for an ox r cow, whether stall or box fed. Straw litter may be greatly economized, and the resulting manure as much benefited, by cutting it into short lengths by the straw-cutter. As the litter can be uniformly spread, the animal lies more comfortably, and the small portions dunged upon can be lifted up and removed without disturbing the rest, while there is no dragging away of the long and clean straw, as is the case when it is uncut.

The weight of straw per day cut by a machine worked by a steam-engine may be put down at from 8 to 10 tons, this being the amount obtained by Mr. Jonas, of Cambridge, in carrying out his system of making cattle food; but in this case the cutting is done simultaneously with the threshing-machine, which delivers the threshed straw at once to the cutter. This effects a great economy in the operation. In ordinary cases the straw has to be brought from the barn by hand, and, the machine also being hand-fed, the weight cut per day will be materially less than that named above. Much, of course, obviously depends upon the relative position of the food-preparing room to the straw barn, the efficiency of the machine, and the ability of the labourer to feed quickly, and so uniformly as to enable it to do its best; but these elements being favourable, if the machine is worked by steam, from 5 to 6 tons a day may be calculated upon. Another element to be taken into consideration is the condition and kind of straw to be operated upon, some being more easily cut than others, while others, as

wheat for instance, from containing much silica, blunt the knives much faster. One of the greatest aids in the performance of work of any kind is the continuity of the operation. The longer a machine can be kept at work, and the materials ready to hand, the better. All stoppages involve readjustments more or less complex, which run away with time. It is a good plan, therefore, to have a commodious chaff-room, so that a large weight of straw may be cut at a time, the produce being stored up, and taken away as required. The amount of time lost in the feeding of stock, occasioned by the neglect of a proper provision of feeding materials, is but too seldom thought of. As before stated, everything in this important department should be so adjusted as to form the links of a chain, all of which are connected with and dependent on each other.

The cutting of hay is characterized by similar circumstances to those of straw. As regards the amount required, the style of feeding will decide that. In the previous chapter we have shown how much hay may be consumed by the horses. Dairy cows, which are the other animals chiefly fed with hay, likewise vary much as to the amount they should have per day. If stall-fed on the most liberal of scales—that is, as much as they can eat—from 50 to 56 lbs. per day will be required per head. This, however, is a ration which cannot possibly pay, so that the weight is generally greatly reduced, and supplemented by other foods. From 10 to 25 lbs. per day may, therefore, be given; and part of this at milking-time, and more as a treat, or as a means of keeping the animal quiet during the operation, than as a regular food, the bulk of which should be made up by other materials.

The roots consumed by the live stock, when not given whole, which is the least economical way, are either sliced or pulped by a machine worked by steam or by hand. It is difficult to estimate the weight of roots capable of being sliced—which is now the general method, pulping being much less used than formerly—by machine, as it is influenced by nearly the same circumstances as those of straw-cutting; but if the machine be worked by steam, 5 tons a day may be reckoned upon, though of course much will depend on the size and efficiency of the machine. As roots, when sliced, cannot be kept long—mangolds especially losing their feeding properties very quickly—the weight required for a day's feeding should at the most be all that is cut. It would be worth while for feeders to try a similar method to that carried out by Mr. Jonas, in which roots, straw chaff, and some kinds of green forage food can be mixed in the sliced and cut condition, the whole being pressed together very firmly. Thus treated, the mass may be kept for a long period, and portions taken from time to time as required. By this method the continuity of working already described, and which so much tends to economy, will be secured. When the machines are worked by hand, it will greatly economize the labour of straw-cutting if care be taken in the choice and distribution of the men employed. Thus it would be wrong to employ a man to work a machine which demands but little thought or judgment, simply because, while he is the more clever in point of intellect, he happens to be the stronger of the two required. To him, then, should be allotted the feeding, which really requires the exercise of thought and observation, and upon which the efficiency of the machine largely depends, while the

working or turning of the winch or handle is given to the less intelligent. In slicing or pulping roots less observation or thought is needed in feeding than in straw-cutting, the machines being nearly self-acting, and requiring only hard work to keep them going. Still, with these as with all other machines, there is a right way to secure the greatest amount of efficiency. Thus there is a certain speed which is best, while the feeding-box or trough should be fed with a limited number of roots, and not, as is frequently the case, filled to the top, which prevents the cleaning out quickly of cutting parts should they happen to get choked, this choking often resulting from the mere weight of over-supply of the roots.

As a practical conclusion to this department, we give the following (for which we are indebted to a leading journal), affording as it does a good idea of the arrangements in a modern Aberdeenshire farm specially devoted to the breeding and feeding of cattle, with the hours of labour, and the work to be done at each period:—

"Seventy feeding beasts are bought as ten or quarters-old steers in February, and kept on until the next winter. About twenty queys (heifers) are also bought every year, and after one calf has been taken from them they are fed off with the steers. Six dairy cows are kept, and their calves, as well as the others, are kept on until they are fattened for the butcher at three years old. Calves begin to drop in February, but some are as late as May. The calves from the dairy cows are brought up by hand, the others suck their dams for about eight months, and are then weaned on oil-cake and straw, but are not setoned. The young beasts are fed in winter on pulped turnips and chaff, the calves getting 2 lbs. of cake in the morning for

ıbout two months. The first feeding beasts go into he byres or cattle-houses about the middle of August, ınd get tares three-fourths ripe, with straw, until the turnips are ready, when they get whole turnips with their 'shaws' (or leaves) on, and straw three times a day; and at night a feed of mashed grain and potatoes. For the last two months they get oil-cake, beginning with 2 lbs. each per day, and increasing to 4 lbs. at the finish."

The following rules for the guidance of the horsemen and cattlemen give further details on this subject, and also show the careful manner in which matters are regulated on this farm :—

"Rules for Cattlemen on the Farm of Tipperty.— 1. Clean out the stalls until 10 minutes past 6 A.M. 2. Turnip the cattle until 20 minutes to 7. 3. Clean out the byres until 10 minutes past 7. 4. Clean down the rumps of cattle until 30 minutes past 7. 5. Straw the cattle until 15 minutes to 8. 6. Bed up the cattle until 8. 1. Pull turnips until 11. 2. Turnip the cattle until 30 minutes past 11. 3. Bed up the cattle until 15 minutes to 12. 4. Straw the cattle until 12. 5. Interval until 2 P.M. 1. Clean the cattle thoroughly until 30 minutes past 3. 2. Clean stalls and turnip until 4. 3. Clean out the byres until 30 minutes past 4. 4. Straw the cattle until 15 minutes to 5. 5. Bed up the cattle until 5. 6. Interval until 7. 1. Give the cattle oil-cake or bruised oats, &c., until 30 minutes past 7. 2. Bed up the cattle until 8.

"P.S.—Each cattleman to wash his cattle once a fortnight, and to keep the dung-pit well levelled down, and to turn out his cattle every fourteen days, and also to attend the threshing-mill when working after 8 o'clock A.M.

"Rules for Horsemen on Tipperty.—1. Each horseman, on entering his service at Tipperty, will have his horses handed to him, with cart and plough, harness, comb, and brushes, carts, shelvings, and frame, plough shovel, graip (fork), and key of press (cupboard), and corn-chest, all complete, and he will have to hand over the same on leaving. 2. All horsemen to enter the stable at 15 minutes to 5 o'clock A.M.; stable cleaned out, dung-pit well levelled down, and horses led to the water, fed and cleaned, until half-past 5; breakfast, from half-past 5 until 6 A.M.; and when horses are not working from 6 to 6, barn work, &c., until yoking time. 3. Horses returning from the yoke to be well rubbed down for 15 minutes and fed; dinner until 15 minutes past 12 o'clock; horses receive oats on entering the stable, and are cleaned. 4. Horses, on returning at 6 o'clock P.M., are cleaned down for 15 minutes, afterwards being watered and fed; a few Swedish turnips given. 5. Stable entered at 7 P.M., horses cleaned well down, afterwards watered, receive oats or bait, and suppered up; stable closed at 8 P.M. No horses to be allowed to leave the stable without a stall-collar on.

"Rules for Sabbath.—All horsemen to attend in the morning and evening on their horses, and in no case to be absent without appointing a substitute approved by the manager, and one horseman to have charge all day by turns, commencing with the foreman."

As in the case of horses, so in carrying out the feeding of dairy cows, there are a great many systems in use, each farmer having his own notions both as to the substances or materials used, and the weights per day given to each animal. Many farmers—and these are so numerous as to make the system they adopt

almost universal—rely upon swede turnips and hay alone for winter feeding, and pasture for summer; or, if house-fed in summer, they cut such kinds of forage food as they may cultivate. To these some add, if obtainable, large quantities of brewers' or distillers' wash, in order to increase the flow of milk, and, for solid food, the grains from the same sources. More advanced feeders, however, taking advantage of the multiplicity of feeding substances besides those above named, adopt more varied and richer systems, and, we need scarcely say, with greatly improved results. It is impossible, within the limits of this section, to give more than a few of these. The following, however, will be of service, and will enable the reader to estimate the weights to be provided. Of the various feeders who stand high as authorities on dairy matters, perhaps public attention has been more decidedly directed to Mr. Horsfall, probably from the exceedingly clever paper which he published in the *Journal of the Royal Agricultural Society.* The details there given are of the most elaborate kind, and have been repeatedly made use of by feeders at home and abroad, the whole being based upon Mr. Horsfall's actual practice, supplemented by much theoretical knowledge of his own, as well as of the high authorities he drew to his counsels. To the principal details of this system we now direct attention. At and after October the animals are wholly housed, and the feeding materials mixed together and made into a steamed mash, the following being the proportions for each cow per day: —5 lbs. of rape cake, 2 lbs. of bran, with a quantity of bean and oat straw cut into chaff, and shells or chaff of oats, sufficient to make up the whole bulk into three feeds a day for each cow of as much as it can eat.

According to the yield of milk, the cowman gives of bean meal from 1 to 2 lbs. per day, this being mixed dry along with the steamed food, and used or not used, as the state of the milking decides. When the cow has consumed as much as it likes of this mixture it has a supply of green food, consisting of cabbages, from October to December, from December till February kohl-rabi, and from February until the new grass comes in, mangold-wurzel. These green foods are, like the others, given upon a principle—namely, that of maintaining variety of flavour according to the season. The weight per day of these foods for each cow must not exceed 35 lbs. The cows are fed three times a day, and after eating the above mixture and the green food, each cow gets 4 lbs. of good meadow hay, or 12 lbs. a day.

While some feeders give a constant supply of water to cows, thus allowing them to drink when and as much as they wish, Mr. Horsfall limits the supply to twice a day, but permits the animals to drink as much as they please.

Another system, based on the experiments of a celebrated continental authority, gives of rape cake, 5½ lbs.; oat straw cut, 25 lbs.; mangold-wurzel cut, 36 lbs. Bran is sometimes used, and is found to produce a good flow of milk of excellent quality, especially for butter: 4 lbs. of this may be given every night, the daily food consisting of mangolds, turnips, and hay. Mr. Horsfall thinks highly of bran for cows during the feeding. Oatmeal at the rate of 3 lbs. per day per cow is also a good food along with the latter-named materials.

The following is another continental system:—Each cow got per day 4·4 lbs. of meadow hay, 13·2 lbs.

f straw, 48 lbs. of linseed meal, 11·5 lbs. of beet-root, nd a cooked mash consisting of 55 lbs. of turnips, 7 lbs. of beet-root, 1·2 lb. of linseed meal, 3·2 lbs. of ape cake, 1·1 lb. of grain dust, 1·1 lb. of mixed meal, bout 1½ oz. of salt, and 6 gallons of water. From his very watery diet a large quantity of milk was obained, 16 quarts of which gave 1 lb. of butter. In the nonth of February, 1856, the calculations were made s to the milk of the cows, eight of which were the ame animals subjected to the experiments made in the revious year. The nutritive value of the food detailed bove was found to be equivalent to upwards of 30 bs. of good meadow hay per day. The food given n another year to the same herd consisted of oat traw, beet-root, the meal of rye, oats, and buckwheat, inseed cake, rape cake, and the dust of wheat or bran, n such proportions as to make the equivalent value of he day's feed amount to a little more than 31 lbs. per ead of hay. None of the food was cooked, and the eet-root was reduced to small pieces and sprinkled ver the meal. The same quantity of milk was not obtained by the latter system of feeding, but the proportion of butter was much larger, being 2 lbs. more for every 20 quarts of milk.

The number of feeds per day of dairy cows varies according to the opinions of different farmers, three times being most usual and convenient. In feeding cows it is of course of great importance to have a regular system, and the same with regard to milking, which, in point of fact, forms part of the feeding system, the two being carried on in close conjunction. The following are the details of one system carried out during the winter, when the cows are house-fed:—The milking begins at half-past 5 in the morning, after

the stalls are cleaned out; each cow gets a feed of roots of some kind or another, generally turnips, to the extent of a quarter of a hundredweight; 7 lbs. of cut hay are given at 7 o'clock, at 9 a pail of water, with ½ lb. of bean meal mixed up in it; 2 lbs. of oil-cake are given at 10 o'clock; at 1 o'clock the cut-hay feed is repeated; at 2 o'clock the animals are turned into the yards for exercise and water, after which 2 lbs. of oil-cake are given, and at 5 a quarter of a hundredweight of swede turnips or other roots. At half-past 5 the second milking is done, and at 8, when bedded up for the night, a third feed of 7 lbs. of cut hay is given. Another system is as follows:—Cleaning up at 5; milking at half-past 5, when the cows have a pailful of hay given them, the munching of which tends to keep them quiet during the process; at half-past 6 they have more hay, to the weight of 10 or 12 lbs.; at 9, 15 lbs. of pulped or sliced mangolds, mixed with 3½ lbs. of straw and 1 lb. of hay, both cut fine; at noon 4 lbs. of rape cake, with 1 lb. of cut hay; at 3 o'clock the mangold feed is repeated, with the mixture of cut straw or hay; at 5, 12 lbs. of hay; and at half-past 5 the second milking is done, before the cows finish the last-given food. Boiling water is poured over the rape cake to take away its rank flavour, which cows have often great difficulty in overcoming their dislike to when given in its crude condition.

Of the various systems of management respecting milking, cleaning up, and feeding which have been from time to time described, perhaps the most complete in all its details, and which at least may serve as a model for others on which to base their operations, was that practised at the celebrated dairy of Mr. Harley, near Glasgow. The food generally consisted of swede

turnips, the different varieties of yellow ditto, with such roots as mangolds and carrots, of leaf crops cabbage and green-cut barley, grass, hay, and straw, the various kinds of grain, beans, linseed, and oil-cake; in fact, as varied a kind of feeding as could be secured. The number of cows usually kept was 100, which of course necessitated a very complete system of management; and Mr. Harley was *facile princeps* at systematizing all his work. The following are its details:—

"A watchman who was employed to guard the premises at night, and to visit the cow-house, in which all the cows were placed, every half hour, to see that all was right, rang a bell at half-past 4 for the cow-man and the dairymaids to get ready, who were bound to be in the house precisely at 5. The byre or cow-men lit the gas, and bedded and dunged the cows. Then all hands assisted in supplying the cows with their mash or soft feed, the men supplying the dry food. Then commenced the milking, which was carried on chiefly by women, who had under their charge from twelve to fifteen cows. Between each pair of milkers was placed a pail of water, with which to wash their hands and the cows' udders, the maids taking charge of the pails, their filling, &c., every other day. Each maid was provided with a milking-pail, a stool, and a large tin vessel, into which to put the whole of the milking. Further, each had a towel and a mop, the latter to wash the floor with. At 11 o'clock the byreman gathered up the clean straw which had been laid down in the morning; the milkmaids, having assisted in giving the soft food, then cleaned and curry-combed their respective lots of cattle. Dry food was then given, and the beds relaid by the byremen, and the place was shut up until 3, when the operations of feed-

ing and milking, as in the morning, were repeated, and the place was once more shut until 7 P.M. At that hour the litter was once more gathered up, the water let on, and all hands assisted in giving it to the cows. Afterwards a full feed of dry provender was given them, the dung was taken away, the place cleaned, and the cows' beds relaid. The house was then shut up about 8 o'clock for the night. The milking pitchers were of black oak, with a white stave for a handle, upon which there was a graduated scale in black scores and figures, by which it was at once seen how much each cow gave. The clerk, or those who carried the milk into the office, had running numbers to the cows placed upon a slate, and opposite to these numbers the quantity of milk, as shown on the graduated scale, obtained from each cow, was set down, and was afterwards transferred into the milk-book.

"To insure the cows being completely milked, the milker of No. 1 stripped No. 2, and a small premium was given weekly to the milker who produced the greatest quantity from stripping. This induced carefulness in milking. The milkers changed their respective lots of cows with each other weekly, and by rotation. This arrangement showed which were the best milkers. Each milker's name was entered at the top of the list of her own lot of cows, and in this way the alternate weekly change was effected without mistake or irregularity. The aggregate quantity of milk yielded by all the cows on the measuring day (which occurred once a week) corresponded, or should have corresponded, with that of the other six days. When the quantities did not tally, the measuring of each individual cow's milk indicated whence the disproportion arose, and to which animals the fault attached.

It also assisted in judging which ought to be selected for sale."

Much of the labour of preparing food, at least with respect to roots, is saved in the system of feeding adopted by the best authorities both in fattening cattle and dairy cows. Roots are to a great extent, if not wholly dispensed with, under the belief that they simply convey a large amount of water, with but a small proportion of nutritive matter, and, moreover, being given in a raw condition, and therefore cold, do injury to the animals by greatly reducing the temperature of their bodies. Recent scientific researches and experiments, in conjunction with a pretty wide range of experience, have demonstrated the latter point to be of the utmost importance. Apart from roots, there is now such a great diversity of materials for feeding, and possessing such valuable properties, that the feeder, by judicious attention to their action on the animals, should have no difficulty in deciding upon a system in the highest degree effective and economical; and not merely as regards the feeding and its cost, but in the preparation of the materials, which, spreading over the year, involves no small expenditure. In putting the cattle upon the reduced weight of roots, the change from the old system must be gradual. Thus, an eminent feeder, who had given 2 cwts. per head per day for large bullocks, and for smaller-sized animals 1 to 1½ cwts., reduced the weight to 80 lbs., 70 lbs., and sometimes as low as 50 lbs., making up the deficiency with straw, chaff, and linseed cake, 3 lbs. each of rape and oil cake, mixed and boiled, and poured over barley straw or hay chaff. Another feeder gave his full-sized bullocks 80 lbs., 40 lbs. being given at 6 o'clock in the morning, and 40 lbs. at 1 o'clock

in the afternoon. At 10 in the forenoon, and at 5 in the afternoon, they had the following mixture:—1 lb. of linseed, boiled for two or three hours in a gallon and a half of water, 2½ lbs. of ground corn, and 5 lbs. of chopped straw, a small quantity of sweet straw being placed in their racks at night.

In concluding our remarks on cattle feeding, we must impress upon the reader the necessity of attending to every detail. Some will no doubt think that many of the points we have insisted upon are but trifles, which may be overlooked, and no great harm or loss result. But it should not be forgotten that the aggregate of the work done consists in reality of a number or succession of little things, and while it is true that life generally is made up of these, it is no less so in the department under consideration. Care is essentially necessary where life is concerned, and more especially where the individual cost of some of the live stock is large. While, therefore, it is important to attend to minutiæ, it is equally imperative that everything should be done in due order, and at the precise time when required.

Soiling Cattle.—An essential point in the system of soiling is the cropping of the land for the production of forage food. These crops will depend, of course, upon the details of the system of feeding adopted. As a rule it may be said that it is impossible to have too great a variety of them; for not only does this enable the feeder to have a number of changes in the feeding stuffs given to the stock, but it possesses this great additional advantage, that it throws the risk of bad crops, resulting from one or other of the many causes ever at work on the farm, over the largest possible number of crops. And as what will be unfavourable

for one may be the reverse for another, it will go hard indeed with the farmer, and be a strange and unusual experience, should all the crops fail. We have elsewhere described the details of the system recommended by one of the earliest and most able advocates of the soiling system in recent times. We now give those proposed by another authority, and one well acquainted with the subject. In this the first crops of the season ready are rye, lucerne, Italian rye grass, and trifolium incarnatum. These are cut for use up to the time when the first-sown successional crops of winter tares are fit for consumption. During the feeding off them the lucerne is allowed to rest and to grow for the making of hay, while the other crops named are being exhausted. Next comes the produce of the second successional crop of winter tares, this being followed by clover, which again is succeeded by the last crop of winter tares. This is supplemented by the second growth of lucerne and Italian rye grass. When these are consumed, the produce of the first successional crop of spring-sown tares comes in, and, when finished, it is followed by the third cutting of Italian rye grass and lucerne. A capital crop is chicory, which is comparatively unknown in this country, but is largely used on the continent. This crop, like the lucerne, remains on the ground for some years, and, when judiciously cultivated and used, will afford three, four, and sometimes even five good cuttings in a season.

CHAPTER III.

WORK CONNECTED WITH THE FEEDING AND MANAGEMENT OF SHEEP AND PIGS.

As may be supposed, the systems of feeding sheep, like those of other farm live stock, vary very much, both as regards the condition and weights given. When pastured sheep have supplementary food, it generally consists of turnips, hay, and grain, or meals and oil-cake. Instead of giving them the turnips whole and alone, some feeders adopt the plan of pulping them, and mixing them with some cut straw or chaff. At first they use 10 lbs. of pulped turnips per day, this being increased gradually till the sheep lamb, after which the weight is increased to 20 lbs. The hay is given in almost its natural condition, not cut, the weight varying from 1 lb. per day upwards. The weight of meals and oil-cake ranges from ½ lb. up to 1½ lbs., according to circumstances. All these materials, except the turnips, are given to the sheep in racks and troughs placed in convenient parts of the field. They have, of course, to be prepared at the steading, whence they are carted. As it tends greatly to the economy of feeding stuffs so to proportion the amounts or weights given that none be left by the animals—to which, as a rule, they will not return, they disliking food breathed or salivated upon—some care will be needed in

estimating the amount of food required at and taken to the fields, the data depending upon the system.

When sheep are supplied with whole turnips in grass fields, they are thrown out from the cart as it passes along, so that in feeding, the manure and decayed portions of the roots left are uniformly distributed over it. About a cart-load to every hundred young sheep may be the quantity allowed per day, this of course being increased in proportion to the age and weight of the animals. When sheep are house-fed the turnips should generally be sliced, the allowance per day varying from 15 to 25 lbs. per head. When meals, grain, peas, or oil-cake are given, the allowance per day of the former (generally oats) is ¾ lb., of peas ½ lb., and of oil-cake ½ lb. In summer, when green forage food is given, the weight consumed per day will vary according to the age, weight, and condition of the animals; but the weight per head provided for those preparing for the butcher—that is, full grown—may be estimated as equal to one-quarter that of the sheep. An experienced feeder rarely fails in estimating with wonderful accuracy the live weight of his stock. Sheep fed in sheds may be roughly calculated to consume a ton per day per hundred. As to the littering of sheep fed in houses with solid floors, it should be only sufficient in quantity to take up or absorb the liquid voidings, and never allowed to remain after it is wet. It is a great mistake to over-litter sheep, which not only like to have a hard surface to lie upon, but soft litter is apt to induce foot disease. It is therefore not easy to give an estimate of the weight of straw required per day; this must be decided by observation, and provided for accordingly.

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When sheep are *folded in yards* the litter should be thinly spread, and not allowed to remain till it heats, and gets soft and foggy. Two litterings a day should be given, and the yards cleaned thoroughly out every fortnight. As hinted above, there is nothing which tends so much to give the animals foot-rot or lameness as standing or lying on soft, and especially heated, surfaces, as in yards where the litter is often allowed to accumulate till it is a foot or more in depth, and of course greatly heated. The feeding should be attended to *regularly*, as recommended in the case of other live stock.

Sheep *folded in the field on turnips* are sometimes supplied with an addition of oil-cake, varying from ½ lb. to 1½ or 2 lbs. per head per day, to which peas are often added. Frequently, however, the weight of cake and peas given is excessive. Where cake and peas are combined, ½ lb. of the former and a pint of the latter are sometimes the allowance; but as a rule these weights are too much to be assimilated by the animal with profit. It has been calculated that the increase of the weight of sheep, when fed under cover, is at the rate of about 2 lbs. per week for each 100 lbs. of live weight, and to make the weight of 100 lbs. it takes 2½ cwts. of oil-cake, the same weight of corn or hay, and three-quarters of a ton of roots. It must be observed, however, that the cost of the food required to produce this weight generally exceeds its value, the difference being made up by the money value of the manure. These results are only obtained when the sheep are fed under shelter, less favourable ones being procured when the sheep are exposed to all weathers. When sheep are folded upon turnips at 30 tons to the acre, it takes to eat down the acre six-

teen young and eight old Leicester sheep, and twenty young and ten old of the black-faced breed.

We have elsewhere given some remarks on the necessity of attending to every point of detail, no matter how minute, connected with the feeding of all classes of live stock, and the following observations on the treatment of lambs, by a thoroughly practical man, enforcing this point, will be valuable:—"I believe that lambing well much depends on the regularity of feeding through the winter. On many occasions I have remarked how much food is wasted by ill-bred animals of every kind, especially by those which have bad constitutions, and by those also that have an inaptitude to fatten; whilst at the same time I have observed that a well-bred animal, with good constitution, has been damaged or ruined for want of proper food and general good management. How necessary, then, it is that the farmer should attend to his matters, and keep his eye *daily* on his flock, and also upon his shepherd and upon his herdsmen! Frequently has it occurred to me that we suffer great injury by neglecting our flocks, even for the shortest period. A day or two's neglect may require weeks of reparation.* The same principles apply to cow stock. It is necessary that they should have a yard and a comfortable, well-strawed shed to lie in; and it is essential that the shed should lie open to the south. You will find that in good and well-littered lodging-places the stock will thrive much faster than they do even with a greater quantity of food consumed in discomfort and in undue exposure to the weather. I have

* It is extremely doubtful whether what has been lost is ever made up. Certainly never fully so. This is the experience of nearly all feeders. This is perhaps more observable in the case of cattle. A young calf or heifer, for example, once allowed to fall off in condition, seldom recovers it. If it does, it is the work of patient care.—AUTHOR.

often seen stock in winter 'stuck' up under a hedge, with unhealthy coats, especially in damp situations, with food apparently plenteous; but, owing to exposure to the rigours of winter, they have been so poor in the spring as to be worth less money than they were worth in the preceding autumn. I am fully persuaded that there is more profit arising from good feeding and nursing stock well, than there is from keeping them in the open fields the greater part of the winter, or in wintering them with straw alone (a most cruel way) in the straw yard. I feed a quantity [number] of stock with straw, to which is added a small quantity of roots and cake. The winter months being the proper time for threshing barley especially, and also a good portion of other crops, we can always afford to give the stock plenty of straw for food, and for bedding to make them comfortable."

Work connected with Pigs.

In this department also of live-stock feeding and management we find that the systems vary very much, both as regards materials and the weight supplied. Fattening pigs of the large breed, when first put up, may have given to them 30 to 40 lbs. of roots of various kinds daily in the form of a mash, with the addition of 4 or 5 lbs. of some kind of meal. Dairy refuse, as it is called, such as whey, skimmed milk, and butter-milk, is largely given to pigs. It is reckoned that it will take two cows to supply the quantity of whey required by one pig. The whey should be stored up in vats or cisterns, as it is all the better for being kept, and the plan, moreover, admits of the excess of the period when the pigs consume less being stored up for that when the consumption is greatest. A good deal

of labour will have to be expended in keeping the animals bodily clean by rubbing them down with straw wisps, or with a softish brush, and in keeping their sties and attached sheds thoroughly clean and free, especially from wet, which has a very prejudicial effect upon their health. Unfortunately for the pig-keepers who follow it, the general opinion is contrary to this advice regarding cleanliness, it being commonly supposed that a pig loves to be dirty. On this we have only to suggest that the two systems should be tried, one against the other, when it would be speedily seen which was most profitable. One eminent feeder and breeder of pigs went the length of employing hose with water at pressure to give the pigs a thorough cleansing, and it was amusing to note how eminently they enjoyed the process, turning their bodies round in order to bring each part under the implement. The same method was employed to give the sty a thorough cleaning out. Pigs, being nearly hairless animals, suffer much from cold, which is simply equivalent to a loss of food. To avoid this, they should be well supplied with abundance of good clean litter in their sheds and yards.

CHAPTER IV.

IMPORTANCE OF KINDLY TREATMENT AS AFFECTING THE PECUNIARY VALUE OF LIVE STOCK, AND OF ATTENTION TO CLEANLINESS AS ECONOMIZING LABOUR, ETC.

THE kindly treatment of all farm animals is a point of essential importance. So directly and largely does it tend to its economical working that the farmer should strongly impress upon his men the necessity of attending to it. It is surprising, and indeed painful in a higher point of view, to think how little this is regarded as affecting, or likely to affect, the economy of the farm, as it naturally influences the profits derived from it. And yet very little consideration would show that an animal kindly treated, even to the extent of being made much of, or petted, as the phrase is, is sure to be more valuable, and to continue so for a longer period, than one badly treated, even should that treatment not go the length of positive cruelty. To prove our assertion it is only necessary to examine the physiological points of the case, and for a clear elucidation of this important subject we refer the reader to the work in this series treating on cattle and dairy management. At present we need only refer to the point to which Dr. Voelcker has drawn especial attention, namely, the necessity for

the animal being kept quiet, and free from all excitement, as materially affecting the progress of fattening, or the production of milk in a dairy cow.

What, however, we have here to deal with relates to other considerations generally lost sight of. Take, for example, a common occurrence in dairying; namely, a cow which we may suppose to be a member of a large herd, and which is by no means noted for its excellence as a producer of milk either in large quantities, or of specially good quality. Suppose this particular animal is disposed of, say to a small farmer, or a family who keep only one cow, or at most two. After *a period, and that generally a short one, the animal* gains a high character as a milker, producing milk in large quantities, as well as of a high quality. Now what has occasioned this difference in the real value of the cow? The answer lies within a very narrow compass; indeed, as far as facts go, there is but one reply, and it is simply this—that as a member of a large herd it would only get at the best the ordinary treatment of farm establishments, and at the worst unkindness, and in some cases—pity that these should be so very frequent—positive cruelty. But in a small farm or a family dairy the probability is that it would be well attended to; indeed, in the latter case it is almost certain to be petted and made much of. We are sure that readers with a fair range of experience would be able to bring forward not a few instances in proof of what we here state; we ourselves know more than one example which we could cite. Another and a striking proof of the fact is that in the great majority of recorded cases of cows remarkable for their milking capabilities, they have been kept on small holdings. Not only are animals in such circumstances

placed under kind treatment, but, from causes obvious enough, frequent changes of food of a good quality are made. Nearly all this contrasts strongly with the ordinary treatment of cows in large herds, where, as a rule, one unvarying system of feeding is adopted, changes, if made at all, only occurring at long intervals; while the scrupulous cleanliness not only of the animal itself, but of its stall and food vessels, which tends so much to its improvement, is certain to be better attended to in the small family dairy than in the large herd, where these details are too often performed in a very perfunctory manner. The point has been again and again referred to, that animals which, boasting of no claim to being pure-bred or of high descent, when in large herds give no particularly good results, are frequently wholly changed in their character when carefully and kindly treated in a small dairy farm. The case is still more marked in the amateur farm, where all the animals, being looked upon as in one sense part of the family establishment, are more than well treated, being petted and made the most of in every way conducive to their comfort. Such facts have been brought forward by more than one eminent authority as evidence that it is not so much breed that is necessary to improve an animal as the kind treatment and good feeding of it. The horse may be instanced in proof of this, it being notorious that animals in so wretched a condition as to be almost incapable of moving, to say nothing of doing any work —in fact, the veriest "old screws"—have, by kind and gentle treatment and attention to feeding, been in a wonderfully short space of time brought into such good condition as to be able to do a fair amount of work, and ultimately become so valuable as to induce

their owners to refuse comparatively high offers for them. In the one case the poor brutes, victims of cruelty and neglect, would soon have gone to the knacker's yard; while in the other, by treatment of the very opposite kind, they have been converted into useful animals, and sources of pecuniary profit. We could cite the case of a man who made a practice of buying what to others seemed utterly worn-out and useless animals, and, bringing them round by kind treatment, realised a handsome profit. Of course, in such cases a knowledge of the animal is necessary, in order to tell whether it is so far gone and ruined by bad treatment as to make its improvement rather hopeless.

The point under consideration may also be illustrated in the converse way. Thus a good cow, for instance, may be very rapidly brought down in condition by want of attention, or utterly ruined by cruel treatment. It is well known to those of observant habits that a dairy cow, if worried or excited, will yield less milk than one allowed to remain tranquil. Nor is the lessening of the quantity of milk the only evil arising from the former treatment: the quality of it also is very materially affected. In the mere taking of dairy cows to and from the pasture-field much harm may be done by over-driving, hurrying, or beating them, or allowing badly trained dogs to worry and harass them. Nor is the house treatment less to be deprecated which is carried out by some cowmen, who shout, knock about, beat, and even kick the poor animals, until they get into such a state of excitement that in some cases the milk is not only materially lessened, but almost wholly retained, the cows not being able to let their milk down through fear. Now,

unfortunately, this fear often becomes habitual, so that every time the cowmen who thus cruelly abuse them come into the byre or shippen, their dislike to and fear of the men are at once seen, and the continuance of such a state of matters has a positively deteriorating influence on the condition of the animals.

We have said enough on this point to show that it is the master's interest to see that his animals are carefully and kindly treated. As we have elsewhere remarked, cruelty is a costly thing, and it is obvious that those who tacitly permit it by negligently allowing their men to exercise it are indirectly cruel themselves, and thus the means of throwing away their own money. We may be excused for quoting from a writer who has published some excellent remarks on this subject:—"Kind treatment of animals is not only our duty, but it pays. Under favourable circumstances the creature develops itself to the full extent of its physical and mental capacity. Who has not noticed the bright, intelligent look of well-kept petted animals, in comparison with the wild, suspicious expression of half-starved and otherwise cruelly treated beasts? All of the splendid breed of horses, cattle, sheep, &c., owe their perfection in a great measure to kind, generous treatment through many generations. We see and read of farmers' poor horses, and farmers' cows; but do most of us stop and inquire why they are so? Will a stunted colt, or a stunted calf, prove the sire or dam of a noble race? Will fine, fleet limbs, smooth coats, and bright eyes, come of starvation and cruelty? The well-fed, well-protected animal is rarely sick; if it is sick, the most careful treatment usually restores it to health. I have seen animals, so sick that under ordinary treatment they

must have died, cured in a short time by intelligent nursing."

We need say little on the higher aspect of the question, the moral obligation that rests upon every one to do his duty, not merely to his fellow-creatures, but also to the lower animals which Providence has intrusted to his care. They are in every sense our dependants; they are intrusted to us for useful purposes, not as objects upon which we can wreak our cruel desires, or leave to the tender mercies of those who, alas! do not know what mercy is. A well-known Roman writer—and the sentiment, coming from one of the people to whose cruelty there seemed to be no limit, is remarkable—says that "the coward is always cruel." Now few amongst us care to be branded with the charge of cowardice, although too many are indifferent to that of cruelty. But in truth, while the moral obligation to do his duty to his neighbour rests upon every one, so does it indirectly imply kind treatment to animals, for it is obvious that what he does, and how he conducts himself, has a reflex influence upon the men under his charge. A cruel and indifferent master is sure to have servants more or less cruel and indifferent also; for, as a rule, they but too gladly follow examples which minister to their love of ease and dislike to work. It is thus, in a double sense, the interest of the master to pay attention to the conduct of his men in all that concerns the live stock of the farm or of cruelty to the animals. While, on the one hand, if he is indifferent to the exercise of kindness he sustains loss by their deterioration, on the other he suffers it none the less by that of his workmen. For it may be regarded as an axiom, that a man who suffers himself to be systematically cruel to the animals

must not be begrudged to attain the standard, as farm servants are, like others, very averse to doing cleaning work thoroughly. Close and careful supervision, therefore, must be given, or the labour will be of comparatively little value. Where the house-fed system of cattle management is adopted, arrangements will have to be made with judgment, in order that cleaning operations may interfere as little as possible with the comfort of the stock. In this will be seen the value of system in economizing time and labour.

Regularity in Feeding.—Nor will system be less requisite in the arrangements for feeding the live stock, especially where the numbers are great. We have already had occasion to speak of the importance of system in all departments of farm work, which alone will secure the attainment of the highest degree of economy. Now in nothing is regularity more essential than in the feeding of live stock, as it influences in a marked degree their general condition and productive value. This is strikingly apparent in the case of dairy cows, simply because the yield of milk, both as regards quantity and quality, affords as it were a gauge or standard by which the effects of the system adopted are readily observable, being at command at least twice a day.

All stock speedily become acquainted with the feeding hours, and if these are not kept almost to the minute, they give vent to their impatience, sometimes in rather a noisy style, their excitement increasing with the extension of the delay. Now all excitement is prejudicial to the health and well-being of the stock, to say nothing of the injury done to the system by the want of food; and thus irregularity in feeding entails a double loss. Another source of loss may

arise from the work of the attendants not being properly apportioned to them. We have known cases in which, through want of system, the feeding of a herd of dairy cows has necessitated the employment of nearly double the number of hands required, and consequently greatly increasing the item of wages. Men are too apt to forget, if indeed one can get them at all to believe, that time is money, and that waste of it is simply waste of their masters' means. Some men, when left to themselves, make sad blunders in carrying on their work. They may be by no means lazy, and yet, through not knowing how to set about their task, they fritter away a vast amount of time by first doing a thing, and then undoing it, finding, perhaps, that it was not requisite either as to time or place. Time is also frequently lost by not having materials and appliances ready for use at the proper time. Half the work is done when all its parts so dovetail as it were into one another that, coming in regular succession, they are attended to at the precise time required, all the necessary materials being at hand, and in such abundance as not to necessitate stoppages until other supplies are prepared or obtained.

We assume, of course, that the apartments for live stock, and for the storing and preparation of the food they consume, are placed conveniently to each other, so that the work may proceed regularly from beginning to end, no step overrunning another, or necessitating the turning back from this point to that. Where buildings are not so arranged, the men obviously have not a fair chance of working systematically, and as more time will be consumed, allowance for this must be made by the master. In feeding live stock one thing must be observed where the men are "short-

handed," as their phrase is; that is, where there are too few men to do the work: the animals must have their full allowance of food given them regularly and at proper intervals. This is often shirked by the men in their anxiety to do the work in a given time. The loss of the latter is as nothing compared with that sustained by the lowered condition of the animal where such a method is for a time carried out. It is a good plan, in respect to food materials, to have those required for one day, or at least the morning's feeding, prepared ready to hand overnight. In small establishments the preparation of food—such as slicing or pulping the roots, breaking the oil-cake, cutting the hay and straw, &c.—is done by hand. This adds materially to the labour, and takes up so much of the men's time that an allowance must be made for it in the system of feeding, and its consequent rules. Where a steam-engine is employed, these mechanical operations are not only more quickly, but better done. Changes in the kinds of food also introduce varying elements, as regards time, which must likewise be allowed for, and the system accordingly modified.

Division III.

THE ECONOMY OF THE FARMHOUSE AND COTTAGE.

CHAPTER I.

GENERAL SERVICE OR LABOUR OF THE FARMHOUSE—LAYING IN, STORING UP, AND ECONOMICAL MANAGEMENT OF PROVISIONS.

We are now prepared to take up the details connected with what may be called home work in farmhouse and cottage. On the domestic management of the farmhouse a goodly sized volume might easily be written, without exhausting the subject. So numerous and important are its operations that it is not easy to know where to begin, so as to compress within the limits of this chapter even the briefest *résumé* of them. There is, however, one point which may be said to lie at the very foundation of all methods of management of the farmhouse, in which labour has to be employed to a greater or less, but still considerable extent, namely, the one generally known as the "servant" or "domestic" question.

If the farmer is now more than ever troubled with *his* servant question, assuredly the mistress of the farmhouse is no less so with hers. The latter

grievance—for such it is generally considered—is of much longer standing than the corresponding one of the farmer. Indeed, as we have already shown, it is only recently that the farm-labour question has assumed a painful aspect, having hitherto been characterized by much kindly feeling and consideration on both sides. But in farmhouses as in others the subject has long been a grievance, and that a sore one, seldom mitigated, and even then but slightly, by the kindly feelings just alluded to as existing on the farm.

How this should happen it is difficult to say. Some, with an utter absence of the chivalrous or gallant feelings usually displayed when the gentler sex is concerned, attribute it to the fact that the sex, as represented by the mistress, cannot, or at least never does, agree with other members of it, represented by the servants or domestics. Be this as it may—and some go the length of holding that this disagreement exists even between ladies of equal social rank—the fact remains that the servant question is one which, as a rule, renders the work of the farmhouse very difficult to be carried on smoothly and pleasantly.

The remedy for this evil lies beyond the scope of our present work. It is, however, clear to us that taking human nature as it is, the faults cannot be all on one side. Grave enough, doubtless, are those on the part of the servants, but the male portion of the community are somewhat inclined to the belief that due consideration is not always made by their mistresses for the peculiar position in which they are placed, nor for the difficulties with which they have to contend. Not the least of these difficulties is the want of that practical education which should precede their going into service.

In a former division of our work we have called attention to the practical education of the farm labourer, or rather to the lack of it, and the imperative necessity for its being attended to in the future interests of agriculture. None the less important is it, although operating in another way, that the practical education of female servants should not be neglected—an education needed for every household, but specially requisite in farmhouses, where the work is of a class demanding qualities of a high order.

It is singular, and by no means complimentary to our educational systems, that this practical education of females, so as to fit them for the duties by which they have to earn their living, has never engaged the attention of those who have rigidly defined what those duties are to be. A close examination of the educational systems adopted for females of the lower and poorer classes would soon show how utterly the fact has been overlooked, that a large proportion of those taught under them have to get their living as servants, and consequently that their education should at least possess some of the elements calculated to make them moderately useful, if not actually clever in the execution of household work. This lack of attention to the practical facts of every-day life is assuredly the rule in our schools for females; and it is only recently that exceptions to it have now and then been met with. It is, however, no less just than gratifying to state that the exceptions are becoming more and more numerous, so that we live in hope they will before long become the rule.

So long as the present system prevails, it is the duty of mistresses to take the circumstances arising out of it into due consideration. In the case of girls new

to service, they will have much to do in the way of teaching before rendering them efficient. Such a frank acceptance of the peculiarities of their position, in conjunction with a kindly desire to overcome its difficulties, would, we venture to think, go far towards reducing, if not to get rid of the chief vexations of the domestic-servant question.

With regard to adult servants professing to be skilled in their work the case is very different. Here the mistress has a fair right to expect that they should be able to perform that which they say they can do. Unfortunately their expectation is but seldom realised. No doubt the servants think they are really capable of performing their duties efficiently; but if they would only learn to observe, they would not fail, one would suppose, to perceive how sadly deficient they really are. Mistresses are not, however, altogether blameless even in these cases. Too frequently characters for efficiency are given to servants by those who well know, from painful experience, that they were undeserving of them. This should not be, and however one may be tempted to give a good character in order not to injure the prospects of the girl, some consideration should be given to the fact that the interests of the mistresses who may afterwards engage her may be grievously injured by such a proceeding.

Another point may be briefly alluded to, and it is one which lies more closely at the root of the matter than may at first sight be supposed—namely, that a hearty interest should be taken by the mistresses in the welfare of the girls. In too many instances, alas! servants are regarded as mere machines; they are called upon to do certain work, but, beyond that, no consideration is bestowed either on their personal comfort or their

various wants and necessities. As to their moral welfare, that is a point which some mistresses seem to think is one with which they have no concern. A hint on this subject ought to suffice. Mistresses should, in point of fact, stand in the place of parents or guardians towards their servants, and whether they think so or not, they are morally responsible for the performance of their duties. To those who have hitherto neglected them, we believe that we have but to appeal to their finer womanly feelings in order to bring about a change in their conduct. By so doing they would most certainly effect another, which would add not only to the comfort of the house, but to the better performance of its work by the servants. The latter must be very bad indeed if they are not eventually touched by the fact that they are really thought of and cared for by their mistresses in every way conducive to their best interests.

The work of a farmhouse being so varied in character, it is essential that order be established and maintained, for by no means, taking it as a whole, can it be regarded as "light;" and, moreover, it is continuous throughout the day, rest only being obtainable when the evening is far advanced. In some respects the work is irregular, sudden emergencies often demanding extra labour, and consequent disarrangement of what may be called the ordinary routine of the house. Though apparently militating against the maintenance of the order so much insisted upon, still, if a good system be organized, it will be found more easily attainable than at first sight would seem possible.

Of course the greater the amount of work to be done, the more numerous must be the servants; and order, valuable at all times, is specially so in such cases.

Each servant should have her own department, and no interference with that of another should be tolerated. Such interference not only hinders work, but gives occasion for excuses for its non-performance; as, for example, by one supposed to have a department under her special care stating that she expected Jane So-and-so to do it, but that she had not done it. Regular hours of getting up in the morning should be insisted upon, and, if work be delayed in consequence of any lapse in this respect, it would only be fair that the servant so failing should be compelled to do it, even though it might trench upon what she considers as her own time. But while regularity in rising is insisted upon by the mistress, as it ought to be, let it be understood that she on her part should so arrange that regular hours for the girls' retiring to rest are also established. Great thoughtlessness is often displayed in this matter by some families, especially where the children are well advanced in years, and have habits and tastes the gratification of which does not always comport with the comfort and physical well-being of the servants. It is always a sign of a well-managed house when there are regular hours for rising, for meals, for various classes of work, and for retiring to rest. To use a familiar but suggestive phrase, everything should go on "like clockwork." If this principle possessed no other value than that of giving the best possible security against servants dawdling away their time, it would be worth rigidly carrying out.

Laying in, Storing up, and Economical Management of Provisions.—Having gone briefly into the leading points connected with the servants of the house, we now proceed to its materials.

And first as to the provisions, their laying in, storing up, and distribution in the way best calculated to insure their economical use. As regards their laying in, a distinction in practice has to be made respecting what, in railway nomenclature, are called "perishable goods," as butchers' meat, fish, and the like. The supply of these will be more or less precarious according to the proximity of the farmhouse to a market town or well-stocked village. The greater the difficulty, the greater the necessity for special arrangements by which these perishable articles may be preserved in good condition as long as possible, or at least till other supplies can be obtained. What those arrangements should be will be specified further on. In some districts greater facilities are at command for securing regular supplies of such perishable articles of domestic consumption, as respectable tradesmen send their vans round at stated intervals. By this means the articles required may be obtained, orders being previously sent by post, or, if not, the tradesmen taking the chance of selling at the door. A humble but often very useful medium for obtaining supplies of fish, as well as meat and game, is afforded by travelling hucksters. Many of them have really good articles for sale, and, by their honesty and willingness to oblige, do a thriving business in country districts, even amongst classes so high in the social scale that they might be supposed to look upon purchases made from such men or women, as the case may be, as decidedly out of the question. Where supplies can be thus obtained with a fair degree of certainty and regularity, the means of storing them in the farmhouse may be of a more simple character than in the special and more remotely situated districts

we have just alluded to. But even here, as in every other department, there are good and bad ways of treating the materials, and therefore we proceed to notice them.

We have said that there must be a practical distinction made in the provisioning of the farmhouse. The above-mentioned perishable articles should, for the sake of economy—a motive, by the way, more potent with well-to-do people than with the poorer classes—be laid in in the smallest quantities, or the lightest weights. But as regards imperishable articles it will be found true economy to purchase comparatively large quantities, not because the difficulty of getting regular supplies may be great, but because it is the most economical method. Such being the case, a stock should be laid in of such articles as are daily, or at least frequently required, and which are not liable to decay or deteriorate in quality by storing. The purchasing of the stock may devolve on one or other member of the household; but, as the mistress knows best what is wanted, she should keep an "order-book," in which all the articles should be named, with the weight and prices at which she desires to obtain them duly entered; and a copy of this should be made, with the date attached on the following page, or on a counterfoil. This retained record will enable her to test the accuracy of the tradesman's books, as well as to calculate the amounts consumed by the family, and the time when new supplies will be required. No doubt this will involve some trouble, but the superior advantages arising from the plan will amply repay it. Not the least of these will be its utility in checking excessive use or waste of the materials, and we assume that economy is a point

worth aiming at, and is indeed one of the objects of the present chapter.

Systematic putting away and storing up of Provisions.—This should be carefully attended to, seeing there is of necessity so much work to be done in the farm-house, much of which may be rendered all the more easy if the requisite things can be readily got at. The order in which the various articles are put away ought to be well considered at the first, and, when once established, should be rigidly adhered to. By this means, and with a fair memory, the various articles will be so disposed, each in its proper position, that any one may at once be found, and that so readily, that, as the saying is, "one may go in the dark" and place his hand upon it without hesitation. When disorderly arrangement is the rule, it is amazing how much valuable time is lost by looking for things which are required immediately. We have heard a well-known man, distinguished not only for the vast amount, but for the variety of work he got through, say that his habit of "order," of having everything in its place, and a particular place for everything, was worth, or saved him in time, many pounds a year. No less valuable is this systematic disposition of articles in daily or frequent use in the household, where time is of equal money value to the case just quoted.

Some care should be bestowed on the disposal of the different articles, keeping them as closely as possible to what may be called their natural order. Thus, those which are apt to impart their flavour to others placed in contact with them, should obviously be kept in a distinct part of the store-room. Then, again, there should be a proper relation to the frequency or otherwise with which certain things are required.

Thus, those in the greatest demand should be placed where they can be most readily got at, while those but seldom needed may be put more or less out of the way. It will also conduce to the order of the farmhouse if there are separate store-rooms for different classes of provisions, &c.: thus perishable articles might have a place distinct from those which would keep longer or for an indefinite time. All these and other points of greater or less importance which we cannot notice here, but which will be obvious on consideration, may by some be thought to possess little practical value. But in truth the opposite is the case, for they tend to the quiet, regular order with which work should be done, and consequently to save time; and, when that is accomplished, one of the most important objects in economical housekeeping is secured.

Another great help to the attainment of this, which may be called the ultimate aim of the housekeeper, is *giving out at stated intervals the proper quantities and weights of the various articles required.* We know of nothing so directly the cause of reckless waste, or at least thoughtless and lavish use of household articles, as the system so often adopted of allowing servants to have the "run" of the store-room. Even those who have been better brought up are almost sure to be sooner or later infected by it. No doubt the mistress who portions out the necessary articles of the farmhouse to her maidens will have to run the gauntlet of invidious remarks concerning her motives, which may be somewhat trying to her. Such remarks servants, as well as the poorer classes generally, are ever but too ready to make. Everything which tends to saving is called stinginess; to be rigorously economical is to be mean, and so on. But the mistress may

well be indifferent to such criticism as this, for even the worst of servants will in course of time see the benefit and propriety of such a system; and it may have possibly a useful effect in the conduct of their after-lives, when they themselves become the heads of households. It is doing a double good when we can well serve the necessities of the household, and impart useful lessons to those who carry on its work.

We now proceed to notice one or two matters connected with provisions.

The Curing of Meat is an important part of farmhouse work. It does not come within the scope of our treatise to give details of this; but we would venture to throw out one caution as to the use of saltpetre in the curing of hams, rounds of beef, &c. This substance is of little utility beyond that of imparting a reddish tone to the flesh, which, however, at the same time, it has a tendency to harden. It is generally used too freely, and hence the hardness so often complained of. Besides, it deprives the flesh of its fine juices, and consequently some hams and rounds of beef, when brought to table, are little better, so far as the lean is concerned, than highly coloured stringy fibres, hard and unpleasant to eat. Finally, salt should be put in with a light hand; indeed, we rarely use it save but in a very small proportion, substituting sugar, which imparts by far the finer flavour to hams.

Preservation of Eggs. — Although, with proper management, the poultry of the farmhouse will keep up a good supply of fresh-laid eggs during the winter season, still we should recommend the housekeeper to preserve a goodly number of those obtained in summer. Some make a great matter of egg preservation; but, in reality, it is a very simple process, chiefly involving

patient labour of a light character, and little or no difficulty in the manipulation or purchase of expensive materials. With a supply of sweet lard or butter, *and jars to contain masses of crude or preserving salt,* the housewife will be prepared to preserve any number of eggs which can be spared from the summer harvest of the poultry-house, by a method so effective and certain in its results that they will keep sweet and retain much of their creamy freshness almost, if not quite, from one season to another. All that is necessary to be done is simply to take care that the whole surface of the egg is thoroughly but not thickly smeared over with the lard; in fact, so thinly that it has simply a greasy look. A layer of salt is then put in the bottom of the jar, and spread evenly of such a thickness that the eggs may be stuck in and supported by it without touching the bottom of the jar. A space should be left between contiguous eggs sufficient to admit of the interposition of a small quantity of salt to keep them from coming in contact with each other. The eggs must be placed in the salt with the small end downwards. A layer of salt is then to be put on the top of the eggs, of sufficient thickness to admit of another row of greased eggs being stuck in, the process being repeated until the jar is filled, when the last row is covered with salt, and the jar tied up with a cloth, with some grease on its upper surface. The principle on which the efficiency of this plan depends is the exclusion of exterior air. This may be secured in other ways, as by the use of bran instead of salt; but this, we incline to think, is open to the objection that the bran is liable to absorb and take up the grease from the surface of the egg, and which is used to close its pores. A third method is that of steeping

the eggs in a solution of lime-water. The substance now so well known as "water-glass" is also employed for the preservation of eggs, and should, we conceive, be very efficient, as it will close them more completely than anything else we know. Sufficient experience of this method, however, has not yet been obtained to justify us in positively recommending it. Of the methods above named we prefer the first, as being the most efficient, and the one most easily and certainly carried out.

Preservation of Fruit in its Natural Condition.—As an orchard will, or ought to be, a part of the farm garden, the storing of its produce is a point of no small importance. This naturally divides itself into two parts; first, the room or place in which the fruit is to be kept; and secondly, the method by which the various kinds and qualities are prepared and deposited therein. With respect to the place or room, there are various opinions as to its situation and construction. Some keep the fruit in the general store-room of the house, along with other materials. This is a plan not to be recommended, not only on account of the fruits themselves, but also on that of the materials. It is well known that some fruits—apples, for example—give off a very perceptible odour; while there are some foods just as remarkable for the facility with which they absorb odours or flavours. Hence it is better to have the fruit store-room separated from the general or food store. If there be more than two cellar apartments, there could scarcely be a better use to which to put one of them than making it a fruit store, provided always that it be thoroughly dry, and well lighted and ventilated. Where the supply of fruit is large, and there is much difficulty in getting an ordinary cellar properly

constructed, or, failing that, a spare room in the floors above, with all the requisites for making it thoroughly efficient, we should be inclined to recommend a fruit-room, specially arranged and constructed, as part of the accommodation of the farmhouse. Did space permit, we could say much on the subject of construction. but we must content ourselves by remarking that such fruit-rooms should be completely isolated from other apartments, especially the dairy, should that form part of the farmhouse, as it often does—milk having, of all known foods, the greatest aptitude for the absorption of flavours or smells. The room should be thoroughly dry, and, as already stated, well ventilated; it should likewise be supplied with a window or windows, though these, as a rule, must be darkened by blind or shutter, not merely because the presence of light has a tendency to promote decay in the fruit, but because much exposed glass surface invariably causes the temperature of the room to be unequal, and a uniformity in this is essential to a well-constructed fruit store. To secure this uniformity it will be a good plan to have the walls double, which possess the additional advantage of keeping out the damp. These points will be sufficient to show in what condition any ordinary room of the house should be kept, in the event of a special fruit store not forming part of the accommodation of the farmhouse.

We now come to the method of placing the fruit in the room; and here we find considerable diversity of opinion. An important point is the condition of the fruit when about to be stored. No fruit which shows the slightest symptom of decay should be selected for keeping, as it would be utterly useless for the purpose. Fruit in this condition, or which is

injured by falling or otherwise, should be *preserved* in the usual way; or, if kept for use in tarts, pies, &c., it should be set apart, and each piece separated from the others, as the worst will inoculate the best. To make the most, indeed, of this class of partially decayed or injured fruit, it will be a better plan to divide it into lots according to condition.

To secure fruit in the best way for storing—and we here suppose that apples and pears form the staple of the supply—great care should be exercised in taking it from the trees so that none be injured. Considerable tact is requisite for this, and it ought to be taken down before it is "dead ripe," as it will keep longer than when in that condition, while the risk of loss from falling, with its consequent injuries, will be avoided. There is great diversity of opinion as to how the fruit should be placed, some believing it is best in layers one above the other, with more or less soft and elastic materials between, as, for instance, tissue-paper, cotton wadding, or granulated substances, such as sand, bran, sawdust, and the like. But considering all the conditions connected with storing, many believe that the best system is to place the fruit in single rows, reaching along the whole length of shelving and across two-thirds of its width, no one piece of fruit touching the other. Indeed, practically, it is scarcely possible to say how great a distance the fruit should be separated—the greater the better, apparently, considering the inoculating power of fruit, any bad symptom or quality in one piece being rapidly communicated to another, if the two be placed in contact, or even if they be very near each other. Much of course will depend on the shelf surface in the store-room; if there be plenty, and to spare, give the fruit the benefit of it.

The shelving should not be made solid in the ordinary way, but of slats, as *a a a*, Fig. 1, with spaces, *b b*, between them about half or three-quarters of an inch in width. The reason for this will be obvious, as giving free ventilation; so also will be that for making the

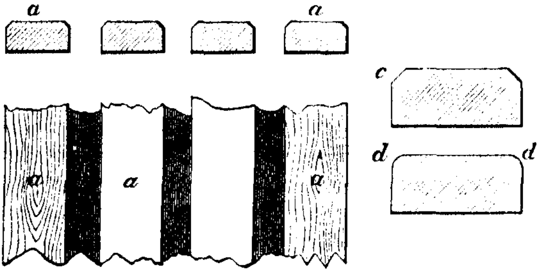

Fig. 1.

width of each slat sufficient to afford a firm and independent seat for the fruit. If the slats be too narrow, the pieces will be apt to roll off into the open spaces, and press against the adjoining slat or other pieces of fruit.

All pressure is injurious—hence the reason for the present advice, as well as for believing the method of piling the fruit in layers one above the other to be bad. A good width for the slats of the shelves is from two to two and a half inches, and the corners, or "arrises," *c*, can be taken off, or rounded as at *d d*. Different parts of the room should be appropriated to distinct kinds and qualities of fruit. Choice fruit, such as peaches, should have a little more care given to them, and perhaps it would be advisable to put strips of fine paper between them and the shelf surface. After being placed, the less the fruit is handled or moved the better, the only thing necessary being to see that none is getting decayed: should any

in this state be met with, it ought to be instantly removed. So much do we deprecate the handling of fruit when once selected and placed in position, that we would have our fruit-room so arranged, with its shelving placed in racks, and with such distances between them, that we could walk along both sides to see the condition of the fruit all round without touching it. A decaying piece would thus at once be detected. By this arrangement none of the shelving would be close to the wall, but have a free walking space between it and the rack.

Sundry Varieties of Work to be done in the Farmhouse.—In addition to, and independently of, the regular work of the farmhouse, there are what may be called odds and ends of labour to be done at certain times and seasons, which in some cases demand the exercise of no small degree of readiness, and even skill. Some of these may be named here, such as the preparing of medicines, &c., required in sudden cases of sickness, whether these be connected with the household or with the general farm, the latter being more especially the case where the holding is small. In large farms an infirmary should be established, and kept supplied with all the necessary appliances for cases of stock ailments. This work of odds and ends to be done well and quickly, which is an important element, requires that the mistress of the house should see that the various materials needed, or likely to be so, should have a place specially appropriated to them, and that each article should have its special position therein. If this systematic arrangement be rigidly maintained —and if not it had better not be attempted—the position of every article will so speedily become familiar that, as we have already intimated, it may be gone for

in the dark. It will also be necessary that the mistress—or, failing her, a servant on whom she can depend—should have at least a fair knowledge of the best and quickest way of preparing the various articles for sudden emergencies. A great help towards expediting such work is to acquire the habit of doing it calmly and without fluster. Some have a natural calmness, and they are fortunate; some have to school themselves into it; while others can never do this, and consequently had better never interfere with it. In large farms, for the reason already stated, the household may sometimes be called upon to assist in cases of sudden sickness amongst the stock, such as a bad case of cow calving, or of milk fever and the like. Here the order and calmness insisted upon will be found invaluable.

CHAPTER II.

GENERAL CONSIDERATIONS CONNECTED WITH THE DOMESTIC HABITS OF THE LABOURER.

SOME of the remarks in the preceding chapter, more or less modified, will be applicable to the different social circumstances of the labourer, the economical management of whose cottage we are now about to describe. If economy of time and material be so essential to the proper regulation of the farmhouse, it will be obvious, on very slight consideration, that it is much more so in the case of the cottage, inasmuch as the labourer can ill afford to waste anything, although to do so is wrong, by whomsoever perpetrated. Waste of time may be regarded as equivalent to waste of materials, as the saving of the one might be made available for the performance of some work which would provide the other. The majority of cottagers, however, attach greater importance to things which can be handled, so to speak, than to time, which chiefly involves mental considerations. In the previous chapter we said comparatively little on the economization of the materials of a household, for it is a no less curious and suggestive than unfortunately a too true circumstance, that the labouring classes are infinitely less careful of everything which they use than those classes who, having

larger means at their disposal, could apparently afford to be wasteful of their substance, or at least indifferent to strict economy. Indeed it may be accepted as a truth that the higher we ascend in the household scale, the more rigidly do we find economy practised and insisted upon. Why, so far as the labouring classes are concerned, such should be the case, it is perhaps not easy to decide, nor indeed is it within our province to inquire; but the fact remains, and it is one which exercises an exceedingly baneful influence on their present position and future prospects. It is a source of grief to their best friends, when appealing for aid in their distress, to be met by an argument which they cannot dispute, namely, that if they (the labourers) would only be economical in the days of their prosperity, they would not require to beg, or be begged for, when want came to their door. And it is of little avail for the charitable to point out that the charge does not apply to all labourers; the fact is made the ground for another charge—that if some are able to provide for a rainy day, all might do so. Now this is a truth which cannot well be gainsaid. It is notorious that in almost every district throughout the country instances may here and there be met with—would there were many such!—in which families are so distinguished for their high personal qualities, for the order and cleanliness of their homes, and for the prudent management of their resources, that they not only keep themselves and their families respectably, but contrive to save so much as rarely to require help from others in times of distress; nay, they are often able to assist those worse off than themselves. On the other hand, such contrasts show but too powerfully the evil results of a style of living and conduct the very

opposite of that just named; nor are they the less painfully striking when, as is often the case, the improvident have larger wages than the prudent and the careful.

The saving here alluded to does not refer merely to wages or money, but of the materials or substances of the household; and this leads us to note the existence of a curious fact, that whilst some are actually saving to a degree approaching stinginess in money matters, they exhibit the most wanton wastefulness in the distribution and use of household materials, as if they could not comprehend that these are but another form of hard cash. It is, indeed, the characteristic of labourers that they cannot see that waste of household substances is in reality waste of money, however obvious it may be to others. We believe the real cause for this lamentable state of things lies in the fact, that saving is thought to be stingy, and to be so considered is what the working classes have such a horror of, that it is almost impossible to bring any charge against them which they feel more acutely or resent more deeply. It would be well for society if this were not so, and it is only those who know the working classes thoroughly who have any conception how widespread it is, and how deeply it is implanted in them. Were it otherwise, we should not witness such frequent recurrences of periods of bad trade and distress—for the terms are almost synonymous—when those of the better classes who have husbanded their resources are compelled to maintain those who have wasted theirs. Well would it be if the labourers could arrive at a knowledge and appreciation of the dignity of economy; if they could believe, and act on the belief, that there is no meanness, but true dignity, in being

saving, while there is more meanness in the waste that brings want. The poverty which springs from imprudence deserves but little pity; the sorrows arising from self-indulgence but scant sympathy. These considerations are not out of place here; on the contrary, they are thoroughly appropriate to the subject of our section, and form, indeed, the very base on which it is supported.

It is but right to say, however, that the waste which we have endeavoured to prove is unquestionably a marked characteristic of a large number of labourers, if not of the class generally, the bright exceptions to which make the matter all the more painful, is not always the result of wilfulness, but of ignorance, indifference, or the fear of the imputation of the charge already alluded to. But, however exercised, the waste is no less a grievous loss to those who perpetrate it, and he would be a true friend of the labourer who could even in one case thoroughly impress on the members of the household the importance of seeing that none is allowed within its precincts. Another cause of the wastefulness which entails so much misery, and which operates so strongly amongst labourers, is the belief that it is of no use for them to be careful, seeing they have so little to go on with. Now it is one of the characteristics of the careful man, that what he chiefly studies are the little things so lightly esteemed by the wasteful. It is an indisputable fact that the people who get on in the world are those who have paid attention to what are called trifles, but which they have happily discovered to be of essential importance.

Take, for example, the saving of money. Some labouring men will tell you that it is no use attempting to save money, because they earn so little. Now,

in nine cases out of ten, this is simply an excuse, and a lame one at best, for the avoidance of a duty to which they have no real inclination. However small the amount of their income, they may save something, no matter how trifling it may be. The great point is the establishment of the principle of saving, and it is a fortunate circumstance in connection with this, that there is in it what the medical faculty call a cumulative productive power. Thus we venture to say that if a labourer begins putting aside but one half-penny a week—and surely the poorest households in our rural districts can do that—he will be surprised to find that before long he could just as easily save a larger sum. We are far from inculcating the habit of saving for the mere gratification of accumulating money for its own sake; what we would wish to impress upon the labouring population is the desire to save money for the good it can and will do, not merely in helping themselves and those dear to them, but in enabling them to succour deserving neighbours upon whom hard times may have come. Taking this higher view, they will find themselves in the possession of a power for good, the value of which none will be more agreeably and profitably surprised to find than themselves. In connection with the point now under consideration, the following extract from an admirable paper read before the Midland Farmers' Club on the "Labourer's Home," by the Rev. Mr. Miller, is suggestive of what may be done by labourers beginning life, and the principle is of course applicable to those who already have a house of their own:—

"He thought there was much false sympathy expressed for the labourer, and for his inability to raise himself in the social scale. The labourer could better

himself if he would make the necessary sacrifices. Of course he could not without self-restraint and rigid economy, any more than any one else. It was said, 'What can a man do with 12s. a week and four children?' But a man was not always burdened with four children, nor was he expected to live on 12s. a week. There was a period when he had no wife and no child, and a full-grown man might always earn more than 12s. a week if he set himself to earn more. If it were allowed that a labourer with a family could live on the ordinary rate of wages (and that must be allowed, because so many did it without any evidence of pinching, and with apparent comfort), it was evident that without such hindrance he could save something. It might be considered that twenty-five years of age was young enough for any man of prudence to marry. Then certainly for seven years previously a man might save 2s. a week out of his wages. That was £5 4s. a year, and in seven years it was £36 8s., to which had to be added compound interest in the savings-bank, bringing it up to about £50. The woman might have put by half as much as the man, so that they would start with £75, from which £15 must be deducted for furniture. This would leave £60. Now, supposing from the time of their marriage nothing was added to this, yet, untouched, it would add to itself by way of interest. In about fifteen years it would have reached £120, so that by the time a man was forty years old he might have that sum. At sixty it would be £250, and that would buy a man a good annuity for the remainder of his life. There was no reason why the labourer should not advance himself, and when he did not raise himself it was not from want of power, but from want of will —it was through sheer abuse of his opportunities."

Influence of the House or Home on the Position and Condition of the Labourer.—A great deal has been both written and said as to the importance of education as a counteracting influence to that which the beershop and public-house exercise, unfortunately but too strongly, on the labourer. To this may be added another beneficial agent—the village club and reading-room, "properly managed and conducted." The words quoted carry with them a vast deal—indeed the whole—of the principle which alone will insure their success. But while by no means desirous, as our readers may suppose, of underrating the power of such instrumentalities for good, we are inclined to blame those "friends of the labourers" who are so much interested in their true advancement in the social and religious scale for forgetting another influence capable of affording attractions of the strongest kind against those of the "drinking-shop"—we refer to that of the house or home. To go no further for the present than "tidiness" in the labourer's cottage, and in the personal appearance of the housewife. We use the term "tidiness" in preference to "order," not only because it is more homely, but because it expresses more clearly to the minds of those most interested in maintaining it what is meant to be conveyed. And this, we may here note by the way, will convey, to those of the better classes who endeavour to the best of their ability to improve the social condition of those under them, a lesson of no small importance, namely, the necessity of using terms which the people understand—a matter almost as essential as the way, tone, and temper in which they are given. Some synonyms, although perfectly correct, and which are never misunderstood by educated minds, are often

woefully so by those less gifted. Take, for instance, the words used above. If you were to employ the term "order" to a poor woman, she would be apt to imagine that she was being ordered about this and about that, while, if the word "tidy" or "tidiness" were used, no offensive or unpleasant train of thought would be raised; and so with many other words and phrases. Words, as well as the way in which they are communicated to the working classes, especially the female portion of them, should be well weighed by those who undertake to teach them a better way of living.

Tidiness, then, of house and person is one of the very first things which the poorer classes have to be taught, and it forms, in fact, the basis of all other improvements. If labourers' wives would but try to understand the influence which untidiness has upon their husbands in positively driving them from their homes, they would blame themselves more and their husbands less than they do for the unfortunate results. Nor does the evil of untidiness rest here; it almost invariably operates strongly upon the wives themselves. However much they may be disinclined to exert themselves to make and keep things "tidy," and however strongly they may defend themselves if blamed for the reverse, the fact remains that they feel heartily dissatisfied with themselves for having such disorder around them. But unable or unwilling to throw off the yoke of bondage under which they wince, they become almost as a natural consequence cross and peevish, and, giving loose to their tongues to get rid of the feeling, and almost invariably choosing their poor husbands as the objects of their wrath and their misdeeds—their *never* being at home, and their being

always drinking at the beer-house or the "public"—they render the home—if such it can be called—doubly miserable to them. We need not then be surprised at the labourer rushing off to the beer-house, where only he sees a bright fire and a clean hearth, hears words of warm welcome, and the scolding of the wife, ceaseless at home, is happily for the time beyond reach of his ears. Further, untidiness is a cause of loss of money. In the matter of dress alone it is obvious that if the clothing of the mother and her children be in a slightly tattered condition, and this be allowed to continue without any effort on her part to mend it, it will get worse, and that so rapidly that all hope of rendering it fit for wear will be lost. But where, on the contrary, by timely stitching and patching, worn or torn parts are repaired, the garments will last a long time. And although we have heard a mother say that she did not like to see her children clothed in patched garments, while she had no such delicacy about seeing them in tattered ones, labourers' wives may nevertheless accept it as a truth that their best friends will be much more gratified at seeing patches than rags.

The same principle—that untidiness is costly—runs through every department of cottage economy, for when plates and knives and forks, cups and saucers, pots and pans, greasy candlesticks, dirty articles of clothing, and, still more incongruous, certain domestic appliances are crowded together on the solitary table of the all-too-confined living-room, it will go hard if sundry breakages do not happen to the chagrin of the poor husband, who can ill afford to pay the cost; and this independently of the disgust and annoyance which even a dissipated labourer will feel at such a sight. Unfortunately it is seen too frequently.

All these and other evils may be greatly overcome by the wife cultivating habits of personal and household tidiness. No doubt, so far as regards the latter, she may urge, and with considerable show of reason, that her cottage does not afford the necessary accommodation for keeping things tidy. This, as elsewhere shown, is to a great extent too true, and furnishes one of the most cogent arguments in favour of a thorough reform in the cottage department of rural economics. At the same time, while apparently forming a valid excuse for household untidiness, this is no reason for it attaining that painful degree which we so frequently encounter in cottages. Happily, in every district of the kingdom, instances may be found in which, despite the miserable lack of good cottage accommodation, the wives contrive to keep everything wonderfully tidy. They may not be able to keep domestic appliances out of sight, but they are at all events clean, and placed in decent order. This arises simply from a difference in the habits of the two classes, and what one can do another may; but what the untidy wife does not will or wish is not likely to be done. To our mind there is nothing more delightful or deserving of encouragement than to see a woman of tidy habits struggling against circumstances which almost force her into untidy ones; the very patches on the worn but cleanly garments absolutely give a nobility of appearance to both her and her family, inasmuch as they indicate a nobility of purpose. We feel assured, therefore, that whatever may be the way in which the love of tidiness is imparted to cottagers' wives who do not at present practise it, it will amply repay the labour of those who bring about this much-needed reform. And just as it is in the master's power to prevent idleness or waste of time on

the part of his workmen, so should it be in that of the mistress of the household to prevent it in the labourers' wives. In truth, it is this waste of time that lies at the bottom of the untidiness which we have shown to be fraught with so much evil. It is pitiable to see how many precious hours are wasted by cottagers' wives in gossiping with their neighbours—"keeping or propping up the door-post," as some one has comically and graphically described it. This door-to-door gossiping we would put down with the strong hand, as directly giving rise to the evils above noticed, and, what is equally as bad, inducing habits highly prejudicial in a moral point of view. Gossipers are always scandal-mongers, and these may be surely set down as mischief-makers.

All these points closely affect the cottage economy of the farm labourer, although some of our readers may fail at first sight to see it. Where a household, however humble it may be, is badly conducted, and its work neglected, the husband is sure to suffer, and his working capabilities becoming deteriorated, the master's interest is affected in greater or less degree. We see, then, how intimate is the connection between one department and another, and how difficult it is to decide, in an off-hand easy way, whether what appears to be a matter of slight importance to the interest of the farm is really so or not until all its bearings are investigated and taken into account. We by no means wish to view unfavourably the position of farm labourers' wives in the matter of tidiness and general order throughout the household, nor to overlook the difficulties which have to be contended with. We should be the first now, as we have been before, to denounce any system which ignores the fact that the labourer's house itself should

aid its inhabitants in being tidy. We may inculcate upon labourers the necessity of attending to various points connected with the maintenance of what is called decent order in the cottage, and back them with wise saws and proverbs, such as "a place for everything, and everything in its place." This, however, seems but a mockery where the cottage is so deficient in accommodation that there is no place in which anything can be put away, far less the "everything" which makes up the odds and ends necessary for the comfort of even the humblest cottage, especially if there be a family. It is painful to know that many dwellings, so far from possessing larders, pantries, or cupboards, are not even provided with shelving, which, to a certain extent, would make up for their deficiency, while conveniences for putting away clothing, &c., are equally wanting. Of course in such cases it is vain to look for helps to secure personal and domestic cleanliness.

The cottager, if spoken to on the importance of attending to all these points, may well put forward the fact as an excuse for neglect, that it is not easy, for example, to wash without water. Now it is but too well known that water is not supplied to rural cottages within reasonable contiguity, but that, on the contrary, the only source available is situated at a considerable distance—in some cases little short of a mile. When we consider the fatigue necessarily attendant upon the work which a cottager's wife has to do—which of course is greatly increased when she has a large family—we need scarcely wonder at her feeling, to say the least, somewhat indifferent to add to it by going so far to fetch water. The temptation to do without it is great, especially considering the quantity required for wash-

ing clothing, which may involve many journeys to the well or spring. Some, perhaps, may say, "Why not get a strong able-bodied husband to do it?" But it is scarcely fair to overburden him, who (poor fellow!) has quite sufficient work of his own to do, and is in all conscience tired enough when he gets home. It is gratifying, however, to note that these deficiencies in cottage accommodation and conveniences are being gradually but quickly, considering the difficulties in the way, got rid of by the construction of dwellings of a superior kind. So numerous indeed are they becoming, that there will soon be little or no fault to find with landlords for neglecting this important department. Nevertheless, cottages miserably deficient in the way indicated are still, taking the country round, to be met with too frequently. It is only fair, therefore, that while we deal out censure on certain bad habits of the labourer, we should also take into consideration and make due allowances for the great difficulties with which he has to contend. Far are we from forgetting these difficulties, which we are as glad to note by way of excuse as we are ready to point out faults which might be amended, and to advise conduct which would assuredly minister to the welfare of the farm labourer and his family.

CHAPTER III.

DETAILS OF ECONOMICAL COTTAGE WORK—FUEL—PROVISIONS.

Fuel and Fires.—It is not alone in the saving of money insisted upon in the preceding chapter that the power and value of attending to little things is observable; it runs through every department of the household. Even in well-regulated families it may be said that each year's experience brings with it fresh knowledge as to the way in which both time and materials might be economized. What room for improvement must there be, therefore, in the households of labourers, in which so little attention is paid to economy that practically it may be said to be regarded as unnecessary, if indeed any consideration at all be given to it! Take, for example, the item which ministers so much to the material comfort of the cottage, namely, the fire. In how many cases is the question ever thought of, "How can we make a ton of coals last for the longest possible time, without in any way lessening the comfort of the fireside, but, on the contrary, greatly adding to it?" Much more might be done towards performing this pleasant piece of household legerdemain than most persons think possible. It does not, for example, consist merely in using up cinders, which a little trouble separates

from the ashes, and which, by the way, might again be made useful by adding them to the manure heap. These cinders make a capital fire, and to use them thus is certainly a much more sensible plan than to throw them into the ash-pit.

The mere way of treating the fire, according as it is done rightly or wrongly, either effects a wonderful saving or causes as great a loss. Some women cannot go near a fire without taking up the poker and stirring it. This is a wasteful process, for it makes the fuel burn fiercely when not required to do so, and sends many a good piece of cinder, or, what is worse, partially consumed coal, into the ash-pit, from which it is too often passed into the midden, or dungheap. We might run through the whole of the household departments, throwing out such hints as the above; but we must hasten to the consideration of other points, simply contenting ourselves with drawing attention to a few ways in which much valuable food and materials are wasted in cottages. Bread, for example, is given to children with so little judgment, that they have more than they really require; and, instead of being carefully put away when the child capriciously throws it down on the floor of the house or on the roadway, it is either allowed to lie there, thrown into the ash-heap, or knocked into the gutter. In peeling potatoes, too, the operation is so carelessly done, that in the great majority of instances from one-third to one-half of the potato is cut away with the skins. Then, again, if a piece of meat be boiled, the rich gravy-like liquid is thrown away; bread-crusts which would make good puddings are thrown into the midden; while bones are wasted in the same fashion. Children's clothes remain unmended, when a timely stitch would make them last

them as being worth the trouble of saving. But not only will the cottager obtain a proportionate increase in the quantity of provisions by making moderately large purchases at a respectable shop, but the bargain will be all the more valuable because the quality is so much better. As a rule, the materials sold at small shops are of the lowest quality, while some of the shopkeepers are not very particular as to the weight they give. Most persons who concern themselves with the improvement of the condition of the working classes are aware of this great evil, and deplore its existence; for it is pitiable to think what victims poor households are to so disgraceful a system. If the cottager cannot save money, although we think we have proved that every one might do so to a small extent, another plan is open to him. Reckoning up the average amount of cash which he pays, say during a month, for the purchase of a small modicum of articles at the huckster's shop, let him put this aside, and at the end of a certain period—the longer, of course, the better—he will have in hand a sum which, if disbursed at a good shop, will procure him a larger stock and of much better quality than he could have obtained had he spent the money *in driblets* on the old system. The only difficulty is the first start, because while putting aside the money the family will require the regular supplies. We believe, however, that if the matter were placed before the farmer or proprietor, or the ladies of the household, they would be so pleased at the desire to introduce a better system into the cottage, that security would at once be given for the necessary amount. We say this with some degree of confidence, well knowing the farmers as a body, and we cannot too often reiterate the fact, that they, no less than the proprietors, are

only too glad to assist their workmen who endeavour to help themselves. This they may well do, if for no other or higher motive than that it is obviously, their interest to do so, knowing that if the labourer be careful in his cottage he will prove equally so on the farm. Respectable grocers in a large way of business would also generally feel inclined to assist labourers in this matter.

Saving effected by having a Stock of Provisions in hand, with Cautions as to its Use.—Should the labourer become possessed of a good stock of household materials, we would give him one caution, the importance of which some experience of the habits of his class enables us to know. When labourers have a large stock of anything to deal with, they seem to think there is to be no end to it, and forthwith is begun and carried out a heedless, wasteful, if not absolutely reckless use of it, so that the stock is got rid of more quickly than would have been a corresponding quantity or weight divided into small lots. Those of the better classes who have to do with charwomen, servants, and the like are well aware of this habit. Now, it can only be overcome by exercising great judgment in the use and giving out of the various materials. A careful woman ought to know how much as a rule is required each day or week, and how long, therefore, the stock should last. It is a good plan to take from the general stock the requisite quantity, putting it aside, if possible, in separate vessels for immediate use, these being replenished from time to time as occasion requires.

But the advantage of having a good stock of household stuff is not exhausted by the consideration we have named, for it is more economical to keep some materials a certain time. Thus, for example, if a bar of soap be cut

into slices of the proper thickness for washing, &c., piled neatly away in a dry cupboard, and kept for a period, it will last much longer than otherwise. Newly cut-up soap almost literally melts away in the washing-tub, and consequently poor people lose a vast deal by buying it in small pieces. For obvious reasons the huckster, as a rule, takes good care that the soap shall be newly cut. Bread should not be eaten when new, for that is simply a waste of the precious commodity. If it cannot be purchased stale, a sufficient supply should be procured to insure a succession of loaves, the oldest being used first. When butter or treacle forms an adjunct, to cut very thin slices of the bread is obviously a waste, as it simply means additional surfaces to be covered with it. For children, at all events, the bread should never be cut thin, nor indeed for parents themselves, if they are desirous of studying economy. There is another consideration on this head which is worthy of note, namely, that good authorities maintain that the real taste or flavour of bread cannot be obtained when cut thin: it is only in thick slices that the true flavour comes out. Take another example, that of the potato, to the waste of which we have already briefly referred. When pared before boiling, instead of the thinnest possible skin being removed, which is all that is necessary, such thick slices are taken off, that from a third to half of the potato is wasted. This is no exaggeration. Of course, to do the work properly demands a little more time and care than the slashing style of the wasteful method, and these are too often grudged by the cottager. At the same time it is the opinion of not a few good judges that the potato is only in perfection when boiled in its "jacket," or skin. The same remarks will apply to the peeling of

turnips, the scraping of carrots, &c. As we have before observed, too, crusts of bread are thrown away, which, if laid aside till a number accumulated, would make a delicious bread pudding. The purchase of bread where there is a family forms one of the largest items of expenditure, and therefore every means should be taken to reduce it. Home-made bread is much more economical than that bought at the baker's, and consequently it will be a good thing if the cottage is supplied with an oven, so that the housewife may be able to make her own bread, which she will find far more satisfactory than that of the baker. It is unnecessary to say that the flour should be kept in a dry place.

No doubt many will say that they have no time to attend to all these matters; but our knowledge of the class enables us to say that those who make this excuse are precisely the ones who waste most time. Were they to reckon up that which is lost by dawdling, gossiping, &c., they would be astonished to find how much they could do in the same period towards making their cottages and family more tidy and comfortable, and saving the hard-earned money of their husband. Sure are we that by so acting they would derive infinitely greater satisfaction than they could possibly obtain from any amount of gossiping. We are also aware, as we have previously had occasion to remark, that all this attention to careful management is by many of the labouring classes denounced as mean and stingy. Most of our readers must have had proofs of this. Now the labourer should consider that to be saving is not to be stingy; indeed, if many of the middle classes were not careful and saving, they could not give so much as they are known to do to charitable

purposes. One who is not careful in little things will never be careful over great; and the labourer may rely on this, that the more attentive he is respecting the little things in his cottage, the more certain will his master feel that he will be equally so in the greater matters of the farm. His services will be more valuable, and hence the more probable is it that he will obtain increased wages, or some allowances calculated to be useful to him.

Having referred to the readiness with which the mistress of the farmhouse would help the cottager's wife in arranging and storing her household stuff in a proper manner, we cannot avoid reiterating that it would be a good thing for both parties if the lady of the house were now and then to visit the cottage of the labourer, to see for herself how things are, and in what way she could assist in making it better. This would require to be done with judgment, kindly tact, and unobtrusively. The working classes are particularly jealous of anything like interference with their concerns, but none are so grateful for true interest in their behalf. But they will not believe this interest to be genuine if heralded by that sharp and snappish fault-finding which some visitors, though really kindly disposed, are apt to indulge in. Further, the cottager entertains the feeling that his home, however humble, is just as much his "castle" as the farmer considers his to be; and he quickly resents, therefore, the slightest appearance of forgetfulness of this on the part of the visitor. We have known a cottager highly offended, and justly so, because his house was abruptly entered without the usual knock having been given. Still greater offence has been given when the visitor, having gained admission, has begun to pry into this

place and that, and positively to take off the lid of the saucepan on the fire in order to see what the family had for dinner. Such conduct is not, as may be supposed, calculated to soften down asperities or overcome prejudices, especially if accompanied by remarks the reverse of complimentary or soothing. All this may be avoided where there is a thorough kindliness of heart, and a real desire on the part of the visitor to be of service to the cottager and his family. To say the least of it, the conduct we have deprecated is anything but polite, and is, in fact, altogether a mistake, proceeding, as it does, from a want of thought, and from gross ignorance of the feelings of the cottager, as well as a total misapprehension of what is right in intercourse between man and man. Rough in exterior as the cottager or his wife may be; rude as they both too often are; and indulging, as a rule, in the habit of addressing one another in a style which to refined minds appears unfeeling, they are very sensitive when brought into contact with their superiors. And they know much better how the latter should and would behave to their equals than is sometimes imagined. If these visitors would practise their usual courtesies in the cottage, they would find the cottager meet them with a demeanour that would often do no discredit to the drawing-room.

It is impossible, in fact, to overrate the importance of an intercourse such as we have suggested, if judiciously carried out by the employer or his wife. A great deal of the discontent which unfortunately exists amongst labourers arises from the feeling that they are completely isolated from any real interest on the part of their employers. Nothing would tend to overcome this discontent more quickly and thoroughly

than the display of a genuine concern for their welfare; and sure we are that the employers would also feel more satisfied with themselves if they took this course. Even as a matter of policy it would be wise to do so, for it should be remembered that the relationship subsisting between farmers and labourers is vastly different now from what it was some time ago. From various causes, to which we need not here specially allude, this relationship has greatly changed and is daily changing for the worse. The labourer has become a power, so to speak, making itself felt, not always to the advantage of the farmer. The kindly bond which formerly existed in many districts, although in some cases broken, still remains in others. True it is but of slender strength; yet a complete rupture we believe may be more certainly avoided by the farmer exercising his kindly powers than by anything that can be done in the shape of lock-outs and combinations, or, indeed, in any other way. Looked at from any point of view, this method is one which carries with it considerations of such vital importance to the farming community, that it is worthy of being well pondered by all who are truly interested in its future progress. And so far as the personal intercourse between the employer and the employed is concerned, there can be no doubt whatever that the difficulties complained of may be quickly and effectively overcome by simply bearing in mind the golden rule of doing unto others as we would that they should do to us; for why should the courtesies which we practise towards those of our own class be neglected in our intercourse with those below us in the social scale?

CHAPTER IV.

ECONOMICAL MANAGEMENT OF THE GARDEN OF THE COTTAGER—THE GARDEN A SOURCE OF INCOME.

IT is not within the scope of this work to give even the briefest notes on gardening as an art. All we propose doing, and which is alone necessary for our purposes, is to say a few words on some points not generally considered, but which are decidedly worthy of attention.

These remarks will bear on the garden as a source not only of materials wanted for the cottage, but also of income. It is true the latter may not be greatly increased even by good gardening; but, however little it may be, it will prove a welcome addition. Moreover, it will undoubtedly tend to foster habits of carefulness and economy.

There are several ways in which a garden may be made to add much more to the resources of the cottage than many would at first sight suppose. One is too apt to be satisfied by simply going along in what may be called the ordinary jog-trot line, seldom giving a thought as to whether, by breaking away from it, more could not be made of the same extent of ground. For example, although the ground may be well filled with ordinary vegetables, the probability is that, for some reason or other, there will be odd corners and spaces left unoccupied. Now, instead of allowing these spaces

to remain vacant, as in nine cases out of ten they are, they should be planted with some useful vegetable suited for the soil. The *Jerusalem artichoke* may be cited as an instance. This vegetable is unknown in a great many cottage gardens, and although Cobbett, one of the most practical writers on gardening, denounced it, like the potato, as worthless, we nevertheless believe it to be very useful, as it will afford many a good and tasty dish. For flavouring soups and stews it is specially valuable. Cooked as a potato, some may not like the flavour at first, but the taste is very soon acquired, and it rapidly becomes a favourite, particularly with the addition of a simple sauce. One great advantage the root possesses for the cottager is that it requires little care; indeed, large crops may be obtained without any cultivation, in the ordinary sense of the term, being given to it. All that is necessary is to insert a few roots or parts of tubers in the soil at similar distances to those now adopted in potato setting. When once the roots are set, no second planting is required; for when the crop is taken up in the autumn or winter—and it will stand any degree of frost—sufficient tubers, or portions of them, will be left in the soil to give the next crop. Indeed, so rapidly does it spread and increase that it is apt to encroach upon the soil of other crops, and by some, therefore, is classified among the pests of the garden. To obviate this propensity, if the cottager can get permission to put the crop in some utterly neglected corner, say even by the roadside or any out-of-the-way spot, he should avail himself of it to raise the plants. If, however, he cannot do this, they may be confined within bounds by careful forking. The root is really worth the little attention it requires, if for no other reason than that

pigs are particularly fond of and thrive upon it. The *parsnip* is also in every way worthy of cultivation, not only for family use, but for the feeding of pigs, which are very partial to it. *Vegetable marrow*, too, may be cultivated with advantage : the plants may be, and often are, grown to great perfection between rows of potatoes, thereby avoiding loss of space. The rootlets of the marrow soon find their way to the unused soil, and entwine over the ridges of potatoes.

In these odd corners and unoccupied pieces of ground the cottager should endeavour to grow as great a variety of vegetables as he possibly can. Even the smallest patches may be utilised for the different varieties of *herbs*, which are but too frequently neglected. Both sweet and bitter herbs are useful not only for the cottage household itself, but also as affording a surplus supply for which a fair price can always be obtained; for, if the cottage be near a large village or town, the demand for sweet herbs especially is so great that they realise high prices. And although the returns may be small, still, as one sum is added to another, and all obtained from different sources, the careful cottager will be surprised to find, at the end of the season, what an amount he has contrived to accumulate. Even from the sale of nosegays, the flowers of which in many cases may be grown between the vegetables, or in the small front plot which is under the care of the children, no insignificant sum may be realised.

Whilst as wide a range of vegetables and flowers should be cultivated as possible, fruit should not be neglected by the cottager. Of course his attention should be chiefly directed to small fruit, such as currants, for which he will always find a ready sale, if not required in the family for puddings, &c.

When properly managed currant-trees are so prolific that a large surplus will, as a rule, be left even after liberal supplies for the cottage table have been taken from them. For the red and white varieties a little manure will be by no means thrown away. If this is not to be had, the soil for some distance round the trees should be kept well stirred and free from weeds. Fresh soil, &c., of a good quality from another garden will likewise prove beneficial. For black currants the best of all manures is the liquid. So greedy are they for this that they will flourish if almost literally planted in a ditch. If near one they will certainly throw out their rootlets into it, much to the advantage of the trees. This is a lesson which ought not to be lost on the cottage gardener. We can scarcely name any garden produce so likely to add to his income as all the varieties of currant-trees, but especially the black, for which there is a never-failing demand. Raspberries, also, are profitable; and even the bramble, or blackberry, is now largely grown in consequence of the demand for the fruit. But, after all, it may be doubted whether anything so abundantly repays the trouble of giving supplies of liquid manure, soapsuds, &c., as the black currant; and if good trees have been selected, the cottager will find that, by attending to them in this way, he will have such a supply of fruit as may by its sale bring in an amount of cash by no means to be despised. Preserves are useful, and the cottager's wife should try to make a small quantity, which may be handy in cases of sickness.

The allusion to liquid manure brings up the subject of manuring the cottage garden generally. It is scarcely necessary to say that without a plentiful application of manure the crops will not yield as much as

they ought to do. The cottager, however, experiences great difficulty in getting supplies of manure, especially of the stable and farmyard kind. But there is always one source to fall back upon, and that is the compost heap. This possesses the great advantage that while it can be constantly added to, as its materials may be found lying about everywhere—for everything that decays, or "rots," as the term is, is a welcome and useful addition to its bulk—it is suitable *to every kind of crop*. Moreover, it presents the manure in the finely comminuted condition in which it is most readily taken up by the plants. Besides, when a compost heap is established and properly attended to, the garden, and, in fact, the entire neighbourhood of the cottage itself, is kept clean and orderly, nothing offensive being permitted to lie about. Children can be made useful in maintaining this cleanliness, continually adding to the value of the manure heap by collecting all kinds of decaying stuffs, and conveying them at once to the heap. The manure which it supplies is also got for nothing, the only ingredients necessary to be bought being lime and salt, which should be added to almost every heap, the former being only omitted when the soil itself is of a limy nature. Even then, however, it would be better to use a little, as it helps the stuff of the heap to decay quickly.

Next in value to manure, as increasing the fertility of the garden, is digging. This should be done very carefully: the time taken to remove weeds as they are turned up with each spit should by no means be grudged, as the freer the soil is from them the richer will be the crops which it produces. Generally the weeds are turned into the soil; but although, when the digging is finished, the exterior may look

clean and free from them, they are nevertheless in the soil, and in a very short time will make their presence known by covering its surface with green stuff. No one will ever grudge the labour of thoroughly eradicating weeds after once seeing how greatly it adds to the value of the crops. Nor should the cottager fail to get rid of grubs, wire-worm, ordinary worms, &c., as they show themselves while the soil is being turned up. The whole of the ground not occupied by any crop intended to stand the winter should in autumn be dug deeply, thrown up into high ridge and furrow, and allowed to lie in this condition till spring. It is difficult to estimate the value of treating the soil in this way. Even the hardest clays are soon brought into a fine, mellow, free-working condition by the action of frost, &c. Finally, the cottager should never allow weeds to run to seed. He ought to remember the suggestive proverb that "one year's seeding is seven years' (after) weeding." Indeed, as soon as weeds appear aboveground, they should be either dug or raked out. When young they may be taken to the compost heap; but if about to seed, they must be burnt, and the ashes thrown on the compost heap.

Division IV.

THE DOMESTIC ANIMALS OF THE FARMHOUSE AND THE COTTAGE—THE PIG—GOAT—POULTRY—RABBITS—DOGS—PIGEONS—BEES.

CHAPTER I.

THE PIG.

As far as the farmhouse is concerned, one would suppose that the cow would be the first domestic animal to come under our notice; but the family supply of milk being obtained from those cows which are kept in the farmsteading, the care of them devolves upon the regular farm servants. It is seldom, comparatively speaking, that this milk for the cottage can be derived from a cow which is the property of the labourer, although in some districts he is so well off as to possess one, the keep of which is either given by the farmer as a perquisite, or else deducted from the wages, or forms part of the latter. In this department, therefore, the cottager generally confines his attention to other animals, the most important of which is the pig, for of all farm live stock he is sure to be the leading article. This need scarcely be wondered at, for "master piggy" being in no way particular as to his food—or

omnivorous, to be scientific—he is ready to devour almost anything or everything the house affords that has even the look of food, and can be passed down his throat. And yet there is not one of our domestic animals which as quickly and abundantly repays such good wholesome food as may, and if possible should, be given to it. Another point in favour of the pig for cottage purposes is, that he affords a great variety of feeding materials, all of which are general favourites. We have known what is called the "inside meat"—as liver and the like—together with the "scraps," or bits cut off in trimming the hams, &c., last a couple for some weeks. To be sure the wife was a good manager, and knew how to work. The hams, if cured nicely, may be disposed of to a handsome profit; but the bacon is generally retained, and helps wonderfully to tide over the scarcity of a hard winter season.

As with most things, so with pigs, there is a right and a wrong way of managing them, and upon the adoption of one or the other depends the fact whether the pig will repay his keep and the care and trouble bestowed upon him. True, under bad management, little of either of the last two is given to the animal. Now the main feature of the good system is, that a great deal of both care and trouble is given, and if the best results are wished for, this must not be grudged. Not that this demands much time on the part of the cottager, for, if properly managed, it is surprising how little of it, after all, need be devoted to the pig. Some of our readers may be disposed to smile when we state that one of the most important points of good management is that the cottager must take an interest in the animal; in other words, piggy must be a pet of the family. Some think that as he

can eat almost anything, and is often obliged to put up with any kind of treatment, the pig differs from other farm live stock, and that he is indifferent to the kindness and gentleness which, it is well known, exercise so beneficial an influence on other animals. This, however, is a great mistake; indeed, we question if any animal is so susceptible of kindness as the pig, or better repays good food, and plenty of it. Again, he is supposed to be a stupid brute, whereas he undoubtedly possesses far more intelligence than some of our domestic animals, and is capable of being taught a number of amusing tricks. Who, for example, has not heard of the "learned pig?" One thing, at all events, pigs learn very quickly, and that is to distinguish between a kind and an unkind master; nay, they can even trace the nice distinction between one who, although not positively unkind, is yet indifferent about their welfare. All this may appear irrelevant; but, in fact, it is quite the reverse. If the cottager pays attention to the animal, and takes the hints which may be gathered from it, we venture to predict that he will not regret following them, nor such further advice as we are now about to give. At all events we can say with certainty that a pig kindly treated will yield a larger quantity of good food than one badly treated; and what is more, he will fatten more quickly, which of course is simply equivalent to a saving of food, and therefore cost of keep. The only painful thing to a person of kindly feelings is that the pet has ultimately to be killed.

In the management of the pig the first point to be attended to is to provide him with a good sty. Any sort of tumble-down place full of holes, through which cold winds and rain find an easy way, is

thought quite good enough for a cottage pigsty. Now not only good food, but warmth is necessary for the pig, and where he is kept continually exposed to cold much of the former is simply lost as feeding and fattening material. (See "Outlines of Modern Farming," volume on "Live Steck of the Farm.") From what we have just said as to a warm house or shed, with open yard attached, the importance of good bedding or littering will at once be seen. It is truly pitiful to see the wet manure—for it is little else—on which pigs are allowed to lie even in the severest frosts. No one who has any knowledge of the science of feeding would tolerate such a state of things, even on the score of economy, to say nothing of humanity. The pig suffers more from cold than any other domestic animal, from the circumstance that it has no thick coat of fur or hair to protect its body.

A book might be written on the feeding of this animal, so numerous are the systems which have been propounded; but we have only space to add that the pig, being omnivorous, will eat almost every kind of food, whether produced on the farm, grown in the garden, or the leavings of the house. Two things, however, are essential: first, cleanliness in the vessels or troughs out of which the pig feeds; and, secondly, cleanliness in the food itself. Where mashes are specially prepared, as with potatoes, turnips, cabbages, or indeed any vegetable, the most scrupulous attention should be paid to have them thoroughly clean: any trouble thus bestowed will be abundantly repaid. Like all other animals which have to be fattened quickly and economically, changes of food are beneficial to the pig. The food given at the end of the fattening period, just before he is handed over to the butcher—

which is a trying time for the tender-hearted children of the cottage, and even for the mother and father also, if they are of the true kindly breed themselves—should be specially rich. The best, perhaps, is oatmeal, although some prefer Indian corn. We ourselves are clearly in favour of the former. When oatmeal is adopted it should be given in the form of a dryish mash, and this finishing or rich food continued for the last fortnight of the pig's life. If he has been well attended to from early porkerhood, the final fattening will be easily and cheaply done, as he will then be in better condition than if otherwise treated. The flesh of a pig properly attended to throughout its existence is infinitely superior to that of a neglected animal, or one which has received attention only by fits and starts, or towards the last. Regular steady progress from beginning to end is what ought to be aimed at in feeding the pig.

Materials used in the construction of Pigsties and other small Outbuildings of the Cottage.—This will be a convenient place to offer a few remarks on this important point.

The labourer should be careful to arrange his little plot so that there may be as ample space as the dimensions will allow for the erection of the "little bits of buildings" necessary to house his pig, or pigs, and any other kind of live stock he may think it desirable to keep. We should advise him to take a pride in making these structures as neat-looking as possible, instead of the wretched tumble-down places they usually are. So far from being eyesores, they may be made very attractive; and the labourer may rest assured that his employer will value him all the more for such evidences of his desire to make things "look a little

bit tidy, sir." Should he and his family devote such spare time as they may have to the cultivation of flowers and useful herbs to the extent previously pointed out, and thus add not a trifle to their income, the garden will certainly not suffer from the close contiguity of the above-mentioned tiny structures. We have known cases in which, by a little attention to these things—too often despised as beneath the notice of any one, and more especially of the labourer—his rich and well-to-do neighbours have been struck by the attractions of the little plot, and have afterwards taken quite a lively interest in the welfare of the family, and assisted them in the best of all ways; that is, by helping them to help themselves. Do not let the labourer suppose for a moment that he is sneered at by his "betters," as he calls them, or that, when he does his best to make his plot not only useful, but also as attractive as possible, his work is depreciated. On the contrary, let him feel assured that it always gives sincere pleasure to those above him to see how earnest he is in his humble efforts to make the very best of his position, and induces them to help the members of his family to make good progress in life. We have known, before now, a well-kept garden to be, humanly speaking, the means of making the fortune of its cultivators. Nor is his employer a whit less satisfied —nay, he is much more so, for he has a direct interest in his labour, and knows that if he is careful and proud of his work in his little plot, he is all the more likely to be careful in his daily avocations on the farm, and to take a pride in doing them well. These considerations are not without value; they lie, indeed, at the very root of the relationship between employer and employed. Many of the difficulties which now disturb

that relationship would be got rid of, if the labourer would come to the conclusion that his employer really has an interest in his welfare, and would gladly forward it, and if he himself would show that he has his own true interests at heart. Were this done by the employed, the employer at the same time doing his part also, we should soon see a very different state of things from that which unfortunately at present exists in too many districts.

It may be thought that it is not an easy matter for the labourer to render his little buildings attractive, as at best he can only make use of such poor material that they must necessarily assume the tumble-down look too well known. But this is far from being the case. It is not the materials one has at command, but the way in which they are used that decides the fate of the erection, whether it shall present a dilapidated appearance or an attractive one. We knew two men who possessed such poor materials that it seemed very unlikely that anything good could be done with them. The result of one of these men's work proved this, but with the other it was different—his little building was more than neat, it was positively pretty. Neatness, at all events, can always be secured—just as one man with threadbare and well-patched garments will, by the cleanliness and care which they display, look like a gentleman, while another with much better garments only presents the appearance of what he almost certainly is—a careless "ne'er-do-weel."

The sketch in Fig. 2, which is the front view of a pigsty or "piggery" for a cottage, looks as if it would not only be difficult to make, but expensive. It is, however, quite the reverse. As to the materials, they are for the most part branches of trees, many of

them being of the kind which on estates are collected and burnt as useless. We are quite sure, from what we know of them, that landlords and farmers would gladly give labourers a supply of their superfluous wood if the latter could show that it would not be wasted in their hands, but would really help to make the estate or farm look the better. Every little helps in this way, and undoubtedly a landlord will be heartily glad

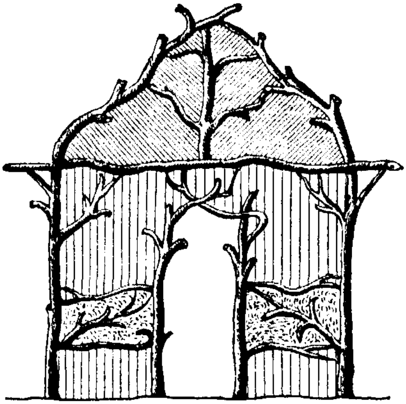

Fig. 2.

to see even the cottages on his estate give evidences of prudent carefulness and an aspiring taste.

As to the difficulty of using such materials, it is more apparent than real. At first there may, perhaps, be a little, but only sufficient to give zest to the pleasurable feeling of overcoming it. But it is surprising how rapidly one gains the knack of choosing the piece best suited for a certain position, and of fitting and fixing it in. In looking at the sketch Fig. 2, we should at first sight say that it was im-

possible to find branches with those twists and curves. Although it is surprising that so many branches should possess such irregular contortions, so to speak. —Fig. 3 shows a few sketched from branches taken indiscriminately from a lot—still, as a rule, to make them assume certain positions in the design, it is necessary to join pieces together. Various ways of forming these junctions by notches or oblique points

Fig. 3.

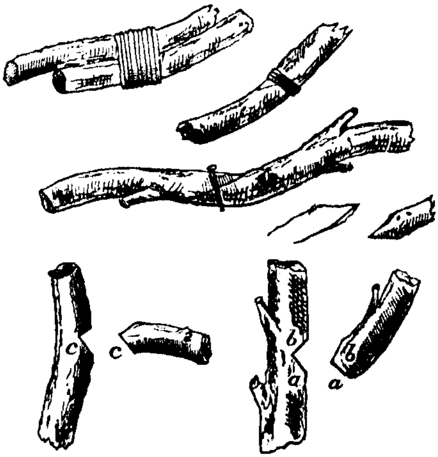

Fig. 4.

are shown in Fig. 4. For large pieces nails are used for holding them together; for small kinds, withes. In some cases notches only are required, as the pressure of the structure keeps them in position. Generally speaking, the details of the design will work themselves out, one branch indicating the next appropriate to it. To secure stability, in addition to the uprights and horizontal pieces, regularly cut

branches must be put in to act as braces or struts, as shown at *a a*, Fig. 5.

We have alluded to the injury done to pigs by allowing them to lie in a cold place, and especially on wet litter. Warmth may be secured in the shed part of the sty, as at *b b*, Fig. 6, by filling in the spaces between the branches forming the framework or skeleton of the structure with heather when obtainable, or by moss or seaweeds. These will best be retained in position by filling in the wide spaces of the framework pretty closely with branches. To prevent the animal lying in wet litter in the yard, which is indicated by *a a*, Fig. 6, by far the best plan is to

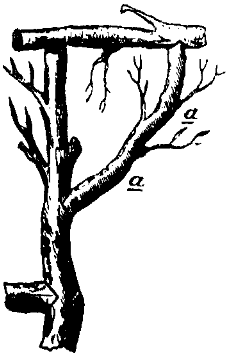

Fig. 5.

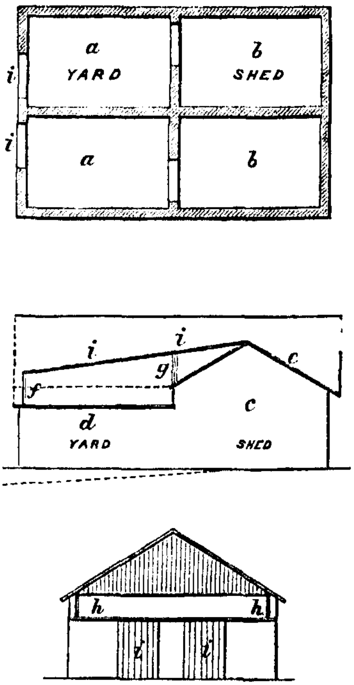

Fig. 6.

cover the yard in with a roof. This must be open at the ends and sides, *f g*, as well as the front, *h h*. This is done to render the yard practically as fresh as if there were no roof, the object being to keep out the rain only. A yard roof, even if made of a better kind of timber, will soon repay its cost by the saving effected in the litter, which will last much longer than if laid in an open yard, while considerably less will be required. Fig. 6 shows a simple arrangement of pigsty: it has two yards and sheds, but only one of each will be necessary if breeding is not gone into. A roof of branches filled in with heather, &c., will be the cheapest, and the penetration of damp may be lessened by having a good slope—the branches of heather should overlap each other like slates on a roof. The dotted lines in the central diagram in Fig. 6 show an alternative method of forming the roof. In these remarks on the little buildings for cottages we have confined ourselves to a class of material easily obtainable in rural districts, while it enables the labourer to attain neatness and attractiveness of design, combined with considerable strength. But if the labourer will cultivate the habit of observation, or if he already possesses it, he will be surprised to find how much more readily he may get different kinds of materials from what he was at first inclined to believe.

CHAPTER II.

THE GOAT AND ITS ADAPTABILITY TO THE COTTAGE HOUSEHOLD.

To those who have travelled on the continent, and mixed much with the inhabitants of rural districts, more especially in Germany, and witnessed the extent to which the goat is kept to give milk for the household, it is a matter of surprise that it is not more frequently met with in this country. Generally speaking, it is a difficult thing for our cottagers to compass the keeping of a cow, although, as already stated, in some districts the keep forms part of his wages. Milk, however, is not less useful in a cottage than in any other house, especially where there are children. Now goat's milk, although possessing a peculiar flavour, or *goût*, is nevertheless rich and nutritious in quality, and can be used for many household purposes in which the flavour would be scarcely, if at all, noticeable. A rich and nutritious milk is, however, so valuable that it surely must be worth the while of the cottager to make an effort, and but a slight one too, to acquire the taste for it. Besides, that which so many families on the continent, and even in this country, use specially for the sake of their health, cannot be such a very bad household substance. At all events there is one thing for which goat's milk should be highly valued, namely, its use

with tea and coffee, in which the peculiar *goût* almost wholly disappears. Again, as hinted above, for children and infants, and particularly for people in delicate health, it is highly valuable. Indeed, so many valuable qualities has it, that the goat might be introduced into other families besides those of the cottager with profit and advantage.

Should the cottager wish to breed goats, he would find in the demand which already exists for them, and which is rapidly increasing, not only a source of income, but a supply of meat for his family; for the kids, if not reared, would give an occasional meal of delicious food. Even the old goat too, if well fed and kindly treated, affords, when killed, a supply of food which, with proper cooking, need not be despised. Taking everything into consideration then, where true economy is considered, and it is a matter of some difficulty to find food for a pig, it is a question whether it would not be better for the cottager to keep a goat or two. By a little management, however, the keeping of them need not debar him from having his pig also.

But even all this does not end the list of what may be made out of the goat, for, as the animal's hide is used in several trades, the cottager will get something for that. The hair is fashioned into wigs for legal gentlemen, gloves are made of the skin, and various other articles of utility or ornament are formed from the horns. The cottager's wife will also find the suet serviceable; and if the skin cannot be sold, she may make a capital and exceedingly comfortable hearthrug, or small coverlet for the children's cot, out of it. We might also mention another use to which the skin is sometimes put on the continent, namely, the making

of an outer or top coat. For winter it is warm, and in wet weather it is in every sense a waterproof garment, the fur or hair, which is on the outside, throwing off the rain like the slates of a house. We fear, however, that this excellent garment will never be extensively adopted in this country, as it might create some amusement amongst the cottager's fellow-labourers; and an Englishman is so keenly sensitive to ridicule, that it often prevents him from doing what he knows to be right.

The housing of the goat is a matter of great simplicity, while its feeding is more easily accomplished than that of almost any other domesticated animal. Where there are young children, one of them might find many days' food along the roadside. The feeding would be still easier if near a common where gorse, furze, or whins are plentiful, or where there is a stretch of plantation to which access can be got, a great deal of food being obtainable from the undergrowth. In short, wherever anything green can be had, a goat will pick up its living, or the provender may be easily gathered and stored up for it. The only thing requiring attention when it is taken out to be fed is, that the animal should be tethered, as it is such an inveterate rambler and climber that it is sure to go where it ought not. The foliage of trees of various kinds is much used in continental countries as goat food. Where permission can be obtained, supplies of this kind may generally be had in this country; indeed, on roadsides trees are considered as general property. This privilege, however, should be used with moderation; and we would impress upon the cottager the necessity of seeing that no wanton destruction is caused to the trees or shrubs by breaking branches, &c. When

plantations are being thinned there will be good opportunities for obtaining supplies. The small bottom branches should be chosen, laid up, and dried in the sun, as these will be found invaluable in the winter. When house-fed during the winter season, or when it cannot be taken out, the animal requires but simple accommodation. A well-aired, dry place is, however, essential, a warm, close, and damp atmosphere being bad. From this it will be seen that the goat can stand cold, and is altogether much more hardy than the pig, and consequently more easily looked after. As to winter food, wayside grass, the tender shoots of gorse, and the early fronds of the fern, if gathered by the children during spring and summer, and stored up, will form its keep. The amount necessary may be made up of extra garden stuff, upon which the animal will thrive well; and if a pig is not kept, the small plot allotted to parsnips and artichokes may add to its food store. Another point not altogether unworthy of notice is that, as life should not be all work, but should have some play mingled with it, the children will find in the goat a delightful playmate, for its habits are exceedingly harmless and playful; and when taken notice of, and kindly treated, its gambols are so amusing that children of older growth and sterner stuff need not consider it beneath their dignity to enjoy and participate in them.

We have said that the milk is rich and nutritious; but, while this is the case, it is nevertheless so easily digested that it is particularly valuable for invalids. This, added to the other specified advantages derivable from the goat, forms a pretty fair list, and one calculated to induce cottagers to give it a trial for at least one season. The goat gives milk for a period

of from five to six months. The daily yield varies, of course, according to breed, keep, and general mode of living; but it averages, say, half a gallon, though it has been stated as much less. A cheese of very fine quality, called *mys*, is made from goats' milk, the yearly value of which may be put down at about 30s.; this includes the cheese made from the skimmed milk. The peculiar *goût* of the milk—noticeable chiefly, if not wholly, when partaken of as it comes from the goat—may be almost entirely got rid of by feeding the animal on good grass in summer and hay in winter. The coarser the food, the more decided is the objectionable flavour, which, however, is not so to all tastes.

As may easily be supposed, the goat does not like confinement, but in a country like ours it cannot, of course, be allowed to roam at large. In the purely rural districts the grass on the roadside, the weeds, &c., in the ditches and on the hedge backings, will, if the animal be tethered, afford it good feeding and healthy exercise. Although in one sense wild in its disposition, it is so very tractable and affectionate that a child may be safely intrusted with it. The confinement to which it must necessarily be subjected in the cottage will be rendered less irksome to it, while less damage will be done to the health of the animal, if the house or cot in which it is kept be as roomy as possible. We have seen goats confined in a space so small that they could scarcely find room to lie down there—a condition wholly antagonistic to the habits of the animal. In addition, the cot should be well ventilated, good air being specially requisite for the goat. The roof of the goat-house should be strong and weatherproof, the materials for which need cost very little, some of them being obtainable for a trifle. What we

said at the conclusion of our last chapter will equally apply to the construction of the goat-house. At A, Fig. 7 shows a sketch of front elevation; B the longitudinal section. Advantage is taken of the wall, *a a*, of the cottage at some convenient part, sheltered, if possible, from the north and north-east winds, and it is proposed to add to the goat-house an apartment, *b b b*, which may be used for poultry or for rabbits, while the roof space is to be utilised as a pigeon-house, *c c*. In the goat-house, which is entered from the front as at A, *d* is the basis dividing the cribs if two goats be

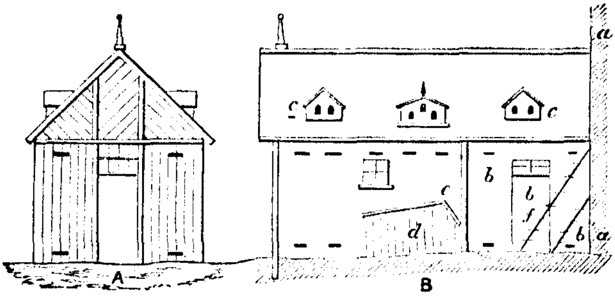

Fig. 7.

kept, each crib being supplied with a small fodder rack, *e*. The poultry or rabbit house is entered from the side by the door, *f*, in B.

The ventilation of the apartments arranged as in the sketch cannot be carried on by the roof, as this is occupied by the pigeons: apertures are therefore made in the walls, as shown by the dark spaces, the fresh air being near the ground level, while those for the egress of foul air are at the upper part of the rooms. Fig. 8 illustrates a simple method of forming a common ventilator for the roof of a piggery, fowl-house, or

goat-house, when the roof is open to the interior; that is, with no ceiling, as when the roof space is used for a dovecote, as in Fig. 7: it is of course applicable in this also, for a dovecote rapidly emits a very bad odour if not kept clean and well ventilated. In Fig. 8 *a a* is an aperture stretching along the whole length of the roof, *a*, to within a short distance of the ends. This is made either by cutting out the space in the roof

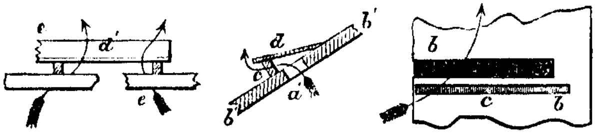

Fig. 8.

board, *b b*, or, if narrow spaces be used, one of these can be left out. To the lower edge, *e e*, of the aperture a strip is fitted, *c* (*c* in section), as marked; this tilts up the lower edge of the board, *d* (*d'* in front view), which prevents the ingress of the rain through the slit *a'*. The arrows show the direction of the foul air as it passes out from the interior. This method may be used in forming ventilators to the fruit-room leading out of the farmhouse, or for covering ventilating apertures made in the walls of rooms, &c.

CHAPTER III.

THE POULTRY OF THE FARMHOUSE AND THE COTTAGE.

Farmhouse Poultry.—While cattle and horses are the only live stock of the farm to which gentlemen deem it worthy of paying attention, poultry come under the care of the ladies of the house. They specially become the objects of their affections, and are raised to the first rank as "pets of the farm." Nor is this to be wondered at, as it is not every lady who can feel confident with a horse, however kindly disposed she may be towards it. Most of them exhibit a downright fear of and aversion to cattle, whether it be the mild and gentle "milky mother of the herd," or the capriciously tempered and too often dangerous "lordly bull." But poultry are such "wee things," so lively, funny, and interesting in their habits, require so little labour in feeding or attending to them, and have so many of what may be called "family ways," that, at least on moderately small farms, they generally fall to the lot of the gentler sex. In discussing this subject we can, of course, only enter into details in a general way, referring the reader to other works in which it is specially and fully treated. (See the volume on "Suburban Farming" in this series.) If poultry-keeping is made a branch of what may be called the

live stock of the farm, much of its work will be undertaken by the regular farm servants, and superintended by the farmer himself. In this case, especially if the farm be situated in a suburban district where there is a demand for live birds, in addition to the poultry prepared for market and those kept for laying, the farmer will probably devote himself to the rearing of the pure breeds, either selecting those for which he may have a fancy, or which seem most likely to meet the requirements of the nearest market.

But on ordinary farms poultry are thought very lightly of by the farmer, and although he keeps them —more, we conjecture, in many instances, from a latent notion that a farm would be incomplete without them than from any other motive—it is only in a certain sense, as they are generally allowed to keep themselves as best they can, so far as any attention he pays them is concerned. Such being the small esteem in which they are held by the farmer, the kinds of poultry kept on the farm are those which demand no particular care, and fortunately do well without any. Hence it is only flocks of the ordinary "barndoor," "farmyard," or "common" fowls which are seen on a farm, the exceptions being those already alluded to, in which the ladies of the house take the poultry department "under their wing;" and, when this is the case, the probability is that flocks of the superior and special breeds will be met with.

Even, however, where the ladies of the farmhouse have a strong desire to keep and become famous for their breeds of pure poultry, the work they have necessarily to attend to indoors, if they are in the highest and best sense of the term "house-proud," demands so much of their time that they have little

to spare for the outdoor labour which the keeping of pure breeds demands. But poultry must be kept, a farmhouse without the crowing, cackling collection of queer, quaint creatures which hens and their protectors are, being something like the play of *Hamlet* without the Dane. However, independently of the supply of food which they yield for the household generally, the farmer himself, much as he may sneer at such "small deer," as he somewhat contemptuously calls hens, will grumble, English fashion, should his table not be supplied pretty often with a couple of fat hens, a savoury duck, a goose at Michaelmas fattened in his own stubble-fields, or the ever-welcome Christmas turkey.

But since, for these and other reasons, poultry must be kept, it is better to have only the ordinary barndoor fowls, thus getting rid of all the difficulties attendant upon varieties of pure breeds. This, however, need not prevent the farm possessing flocks of fine breeds, only it must be borne in mind that when these are kept it involves an outlay of time, care, and often harassing attention, which will tell greatly against the regular work of the house. If the farmer be so well-to-do that, a housekeeper being kept, his wife need not concern herself with its management, the case is different. The lady of the house may then, if "poultry mad," indulge to the utmost her love for the "purest of the pure breeds." She will find, however, that for fancy birds fancy prices must be paid. But even in such a case we would still recommend a flock of barndoor fowls to be kept. They will preserve the "look" which farms from time immemorial have had of crowing, pecking, fighting, funny, "rag-tag" poultry wandering at their sweet will where they list. In doing so the mongrel birds will pick up, out of what otherwise

would be wasted, the greater part of their food, and furnish many a basketful of splendid eggs, and not a few choice dishes for the table. In these respects the lady of the house will most probably make the discovery that the poor barndoor hen, so much despised by amateurs, frequenters of, and exhibitors at poultry shows, surpasses the best of her prized and pet poultry; just as the master may find—as has not seldom happened, that a poor mongrel cow will yield produce in milk, butter, or cheese, and keep on for "no end of time" doing so, and also in regularly and easily adding to the herd fine calves, when a dearly bought prize cow may be conspicuous from the absence of the above-named useful qualities.

But the other side of the question must not be overlooked, nor the advantages arising from keeping pure breeds ignored or denied. Pure breeding is generally very profitable, high and altogether fancy prices being obtained for the birds, and also for "sittings" of their eggs. In proof of this many striking examples are on record; for instance, nearly £1,000 has been known to have been made, in one season alone, from one flock. Doubtless this is an exceptional experience; but there is no doubt that, properly managed as well in the selling as in the breeding and rearing department, pure-bred flocks will yield a handsome return for their outlay. The great point, where money-making is the object, is to keep as sharp as possible a look-out on the market for breeds likely to become fashionable, as it is only those for which what is called a "rage" exists that the highest prices are obtained.

But the finest birds of the purest breeds cannot be kept and made to yield, if not the fancy, at least the high prices one so often hears about, without great

labour and constant care. True the labour is not heavy, but it must be regularly kept up, and of this as well as of the care those who know little of them from practical experience may learn something by consulting the work of Mrs. Ferguson Blair, who, being *par excellence* the "Hen Wife" of the day, has given that as its title.

Some of the care bestowed on the pure breeds, if kept on the farm, should be given to the barndoor fowls, as, although the latter almost entirely keep themselves, a little extra food and attention will be amply repaid.

To the flocks of pure and mongrel breeds of the farm poultry—that is, hens—there will, of course, be added ducks, geese, and turkeys, and perhaps guinea-fowls, while, if not for useful, at least for ornamental purposes, the peacock and peahen may also find a place. The details of management of all these do not fall within the scope of this work. To those desirous of knowing what they are, and how they may be best carried out, we must refer the reader to other works, more than one of which will doubtless form part of the Farm-house Library. The following brief notes and illustrations may, however, be useful here in the way of suggestion:—

The hen-house should be thoroughly clean and warm, yet well supplied with fresh air. A southerly aspect is the best. The house should be made just large enough to accommodate the fowls. The floor must be slightly elevated above the ground, to preserve it from damp, and paved either with asphalt or concrete. The perches should be placed in a sloping position (see Fig. 9), at various distances one above the other, commencing four or five feet from the ground, and rising gradually to the top of the hen-house. Care, how-

ever, must be taken not to place them exactly one above another. The best plan of fitting up the perches is to insert them in grooves, as they can then be readily taken out and cleaned, and either put away when not wanted, or increased as the stock of fowls grows large. It is as well not to have them of too regular a form, but, if possible, resembling the branches of a tree, as birds naturally like best to roost upon such as have the bark on. Thus saplings, when procurable, make the best perches. A piece of wood, some 4 by 2 inches, with narrow slips nailed across it about 3 inches apart, resembling the steps of a ladder, should be placed at an easy slope at one end of the perches. This will enable the fowls to climb more readily to them from the floor, and although some prefer to use their wings, this is a great accommodation for the fat and the indolent. It is also requisite, where there are chickens, to erect a perch or two very near the ground, so that they may have a roosting-place before they gain courage enough to climb higher, and join their full-grown companions. A small aperture is usually made in the door to allow the fowls, which are early risers, free egress as soon as dawn commences. This small door, though usually made near the ground, would be much better a little higher up. This arrangement will prevent the entrance of rats and vermin, and, by the help of a ladder inside, the hole, or little doorway, is

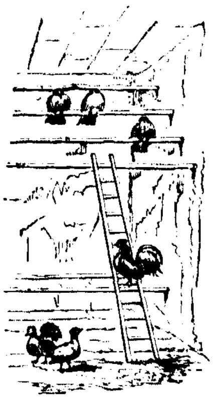

Fig. 9.

easily reached by the fowls. Any small outhouse which is perfectly dry may be readily adapted for the keeping of poultry; and the more snugly it is situated the better. But arrangements must be made for the admission of a free current of air during the day. For this purpose there should be a few openings of fine lattice-work, with shutters to each, which must be carefully closed at night. Originally a tropical bird, the hen still retains her love of warmth. Not merely as adding to the comfort of the poultry, then, should warmth be one of the characteristic features of the hen-house, but because it encourages the desire to lay. Some people—indeed we may say the majority—believe that to cease laying during the cold weather is a necessity. It is not so, however. There is no material reason why hens should not lay "all the year round;" and they will do so when placed under the most favourable circumstances. Poultry-keepers who know this maintain the animal heat by putting such ingredients as cayenne pepper in their winter feed. This frequently has the desired effect; and it is also good, if not given in excess, for the general health of the birds. Those who do not agree with this practice heat their hen-houses by artificial means. Various ways of doing this cheaply will suggest themselves to ingenious poultry-keepers.

Feeding.—Fowls kept for producing eggs and chickens, and which are not being fattened, should be fed regularly twice a day in the same place, which must be sheltered from wind and rain. Although the open yard is most commonly used for the purpose, both in summer and winter, unless the weather be dry it may possibly prove injurious, for damp is more hurtful to fowls than extreme cold. The heat of the

noonday sun is also deleterious to very young chickens, although not so to full-grown fowls. As nearly as the variations of the seasons will allow, their food should be given at the same hour. The first feeding should be early in the morning, and the second an hour or two before sunset, an ample quantity being furnished, or they will soon lose their robustness, and lay fewer as well as smaller and inferior eggs compared with those they would produce if better fed. Fowls like a variety of food, and refuse or "waste" meat and vegetables of all kinds afford them nourishment. Pure salt, and the liquor in which salt meat or fish has been boiled, should not be given to them; but bits of meat, liver, or sheep's pluck, either raw or cooked, and cut up very small, will be a great improvement. Coarsely pounded oil-cake, raspings, and broken ship-biscuit are also excellent, and all the better if full of grubs, as fowls are very fond not only of them, but of all sorts of worms. But meal or animal food, however, should always be given them with judgment. If administered indiscriminately, the birds will suffer in more ways than one. It will improve the condition of the poultry if some hard grain is given to them morning and night; and, unless thrown in the yard, it should be mixed with a small quantity of powdered mortar, limestone, or gravel. Rice is also excellent, especially if boiled with skim milk, or sufficiently saturated to cause it to swell without retaining any quantity of the fluid. But although boiling is not necessary to digestion, as the fowl's gizzard can crush, or rather grind, the hardest species of corn, still rice uncooked is rarely given, just as hard grain or Indian corn is as seldom given, boiled or unboiled. Rice, in addition to its strengthening qualities, is considered to

improve the delicacy of the flesh. Given to chickens boiled in milk, we have found it very successful.

The laying nests are often small, as shown in the illustration at B, Fig. 15 (p. 229), being wood boxes from 12 to 18 inches square, and about 6 to 8 inches deep. They are partly open in front, as at *c c*. If made in rows, the dotted lines at *b* show the division between two boxes. In A a section of two of the boxes is shown at *d d*. For description of A see further on, in the section headed Poultry of the Cottage. Straw is preferable to hay for the lining of the nest, which should be kept thoroughly clean. As a rule hens do not like, and therefore take with difficulty to open or exposed places, either for laying or sitting. Many infinitely prefer to have quiet, retired, out-of-the-way places, and all the better if they find them out themselves.

Hatching.—Within about a month's time from the commencement of laying, when a hen has produced from a dozen to twenty eggs, a good sitter will show an inclination for *hatching*. This she evinces by scraping up straw, as if for the purpose of building a nest, searching into corners, and uttering a peculiar cry resembling the "clucking" with which she calls her chickens. She flutters about, appears restless and disturbed, while her comb and wattles, formerly a brilliant red, become of a pale and sickly hue. When all these are noticed—and the poultry-keeper must always be on the look-out—a nest of straw should be made in one of the boxes (such as Fig. 10 or Fig. 15), and an egg (boiled hard, as less liable to be broken) placed within the nest, as an inducement to the hen to take to the latter. In choosing the eggs on which the hen is intended to sit, it is desirable that they should be recently laid, and also as large as possible; and, as a rule, none should be

it is better not to do so, for the chicken requires no food until the next day, the yolk which it has taken into its body being quite sufficient to sustain it till then, and the too early introduction of food will only occasion pain. The yolk of a hard-boiled egg, sliced

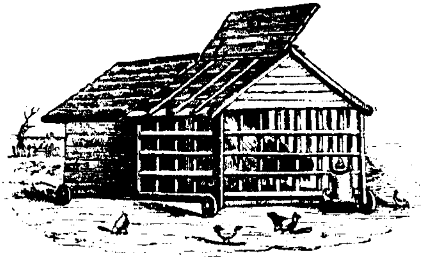

Fig. 11.

very small, with a few split groats, should be offered on the following morning, or, if the weather is cold, a peppercorn will do no harm. If the chickens seem

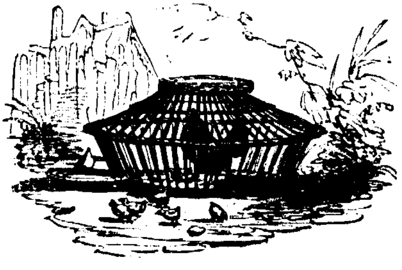

Fig. 12.

strong and lively they may be then removed from the nest, and placed with the hen in a coop (Fig. 11). This is made to move upon wheels, and roofed and floored with thin wood, having clean straw laid at the bottom. Occasionally basket coops (Fig. 12) are used;

but these are objectionable, as there is no shelter for the hen in the event of a shower of rain coming on. After the lapse of a couple of days, provided the weather be warm and dry, the coop with the hen and chickens should be carried, after feeding, to some sunny spot in the garden, and left for a few hours with the roof raised, as shown in the woodcut, to admit a freer passage of air. It should not be moved, however, before the dew has thoroughly disappeared, care being taken not to place it on grass, unless the latter has been recently mown, and is also thoroughly dry, for damp, as already mentioned—and it cannot be too frequently insisted upon—is even more injurious than cold. It is better, perhaps, to leave them in some warm part of the garden, as they must not yet be allowed to mix with the general flock of poultry, the hen being confined in the coop, to prevent her from tiring the brood by leading them over too much ground. A handful of barley should be given to the hen while in the garden, some of which she will break for the chickens. These will not stray far from the hen, which will call them to the shelter of her wing in case of a shower, or on the appearance of any danger. Long before sunset the coop and its contents should be returned to the house, and, as evening closes in, the last meal given, and the brood left for the night. The hen is not unfrequently kept confined in this way for above a fortnight; the length of time, however, should be regulated according to the state of the brood and the weather. When the chickens acquire sufficient strength to roam about, it is time for the hen to be allowed the liberty of the garden, or the range of a field, where she will scratch up weeds and worms for her chicks. This should be continued until the latter

are old enough to be taken into the poultry-yard and fed with the other fowls. While being thus reared pure water must always be left within their reach. This should be contained in a utensil made for the purpose, which may be bought at any earthenware shop (Fig. 13). By the use of this they are prevented from wetting their feet and feathers, and from drowning, as has happened when they have been very young, and the water carelessly put in a deep vessel. The water should be frequently changed, for, if suffered to remain till it becomes foul, it is not good for the chickens. The latter are generally separated from the hen when about six or eight weeks old, but she does not entirely desert them until they are full-feathered, and able to take care of themselves. At that period her anxiety for them ceases, she goes to roost as before, and soon feels disposed to lay again. The chickens will also go to roost, and should have for their use perches not thicker than their claws can easily grasp, although, strictly speaking, the holding on to the perch is not so much an act of volition as an involuntary action of the muscles. The reason for this singular adaptation to circumstances is clear enough; for if the holding on were a voluntary and firm grasping of the perch, as soon as sleep overtook the bird the grip, or grasp, would relax, and the bird fall off; but being what may be called a mechanical effect, dependent upon the weight of the sitting bird, the latter keeps sitting, whether awake or sleeping, and this without any effort on its own part. The perches should neither be too sharp nor too round, and the highest should not be more than

Fig. 13.

three feet from the ground until the chickens are above three months old.

Feeding Chickens.—When a chicken first escapes from the shell, its stomach is so very small that it is not capable of containing more food at a time than might be rolled into the compass of a pea. The stomach, however, expands as the bird increases in growth, and in the course of seven or eight weeks the crop will be able to hold nearly as much as that of a pullet, and such strength does the gizzard acquire, that it assists the stomach in digesting the hardest grain that can be given to it. The coarse sand they pick up adds greatly to this strength, which may also be considerably assisted by boiling an egg hard, pounding the shell up with it, and giving it them occasionally for food. At six weeks old chickens may be fed on corn mixed with hot mealy potatoes and any scraps from the table, such as are given to store fowls. Barley-meal mixed with milk should be frequently given, care being taken that too much milk is not used, as all watery or sloppy food should be avoided, or it will subject them to the scour, for which the best remedy is some toasted bread sopped in ale or broth. Curds chopped up small, and the milk thoroughly squeezed out, are an excellent addition to their food, and may be easily made by putting a piece of alum into a little boiling milk. Chickens are particularly fond of animal food, either raw or dressed, and will eat it alone, or mixed with meal. This is very nutritious, and easy of digestion. (See previous remarks on animal food.)

A brood separated from the hen at the age of eight or ten weeks, and being then strong and healthy, will in a short time have grown sufficiently to be *fattened* as spring chickens, pullets, and cockerels.

The proper coop for the purpose of fattening should have partitions just the size to hold a fowl without permitting it to turn round. The front should have bars wide enough to admit the head and neck of the fowl, with a trough underneath to contain food and water (Fig. 14). There should be a door at the back, through which the fowl may be either placed in the coop or removed from it. A false bottom should be made to the coop, which must be removed and cleaned every three or four days. The coop may be made for any number, and, as it is movable, it can be placed in any quiet snug corner, for it is desirable that while fattening the birds should not be disturbed by the noise of other poultry.

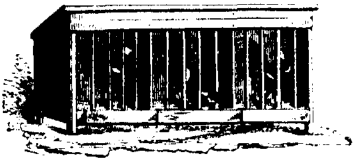

Fig. 14.

In the neighbourhood of Horsham, where the fowls are remarkable for their size, they are fattened either upon ground oats made into gruel, and mixed with brown sugar, pot-liquor, milk, and hog's lard, or with ground oats, suet, treacle, and sheep's pluck cut up small; rolls of the size for cramming being made of the pot-liquor, mixed with boiled oatmeal, and worked to the consistency of paste. These are used night and morning. Some fowls so fattened, and cooped for two or three days previously to being crammed, weigh as much as ten pounds; but these are generally superior breeds, the more ordinary ones averaging from five to seven pounds.

A good course of feeding for the first week, until they become contented in confinement, is bruised

barley made into a paste with treacle and new milk, which should be given to them four times a day, or placed for use as they please; a little gravel or coarse sand should also be left in the trough.

We now take up the *Poultry of the Cottage.* Should the cottager, whether from lack of accommodation or from inability to procure food, find it a difficult matter to keep either a pig or a goat, he will have no difficulty, at any rate, in finding both house-room and food for a pretty large flock of poultry. The great demand for eggs and poultry fattened for the table—a demand which is so constantly increasing that it is almost impossible to conjecture what point it will reach—renders it a matter of no small importance that our cottagers should devote much more attention to the rearing of poultry than they have hitherto been in the habit of doing. This might be done with very little labour on their part, and at an expenditure which they could, with but a trifling exertion, meet at the outset, while the after-profits speedily obtained would amply recoup this, leaving them with a stock which would yield a handsome profit. The importation of eggs from the continent is enormous. France alone has given us, in one year, no fewer than 500,000,000, the pecuniary value of which was estimated at £2,000,000 sterling. Now when we consider that other countries also send us large numbers, some idea may be formed of the vastness and importance of the trade that is done in this seemingly trifling commodity. Further, when we take into account the fact that a large, if not the greatest, proportion of the eggs imported was produced by poultry kept at the cottages of the peasants, it seems a pity that our own cottagers should not have a share in so lucrative a business.

But this trade is not confined to eggs alone, for immense numbers of fat chickens and hens are sent to the Parisian and other French markets, so that it is almost impossible to overrate its importance.

Poultry-keeping, even if carelessly conducted, will assuredly pay at all events for the cost of the materials. Even taking the very worst view of the case, we can scarcely imagine that it will not leave a fair profit, while, if a moderate degree of attention is displayed, the returns will be handsome. But where all is done that should be done, and the cottager takes an interest in the birds, the profits become so large that those who realise them scarcely like to make them known. This could be easily proved, but the reader must content himself with our bare statement of the fact. In reviewing all we have said on the subject, the reader may perhaps think that if the highest profits are only attainable where this care is bestowed, it can scarcely be expected that cottagers can do much. But it certainly is a singular fact that the poultry kept by poor people are, as a rule, thriving and productive, and this in spite of the little care taken of them by their owners. As to appliances, which in the case of well-to-do poultry-keepers are somewhat numerous and rather costly, the cottager need not trouble himself on that score. Those which are requisite can be easily made by very simple contrivances. And as regards the necessary care and attention, an examination will show that the points to be considered are not so numerous after all, but resolve themselves into two or three leading ones. Much of the healthy, thriving condition of poor men's poultry is due to the natural style in which the birds live.

If the cottager has no cellar in which to keep his

poultry, and has to build a special house for them, this may be very cheaply done in a variety of ways by a handy fellow, which we presume him to be. What we have said and illustrated in the chapters on pigs and goats will be more or less applicable to the construction and fitting up of the poultry-house, as also will much of the first section of this chapter on fittings. To this may be added a Yankee "notion," in which the spaces between the steps of a stair, such as that of a cellar

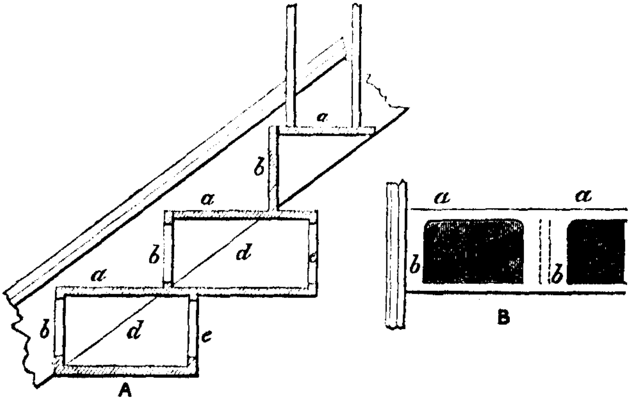

Fig. 15.

or outbuilding, where access can be had to the back of the stair, may be utilised for sitting or hatching and laying hens. This "notion" we have thrown into a sketch in section A (see front view, B, in Fig. 15), in which *a a a* are the "treads" of the stair, and *b b b* the "risers;" in these, holes, *e e*, are cut to allow the hens to enter boxes, *d d*, behind risers, and which may be provided also with doors, so that the contents of the nest may be got at easily from the back. No attempt

at costly fittings up should be made. It will be enough if the cottager secures a warm, cosy, and well-ventilated place, thoroughly free from damp, which is an essential. Such a house being provided and stocked with a healthy flock of ordinary barndoor fowls, which will be the best for his purposes, making the most of them will depend upon himself, the principal thing he has to attend to being the supply of pure clean water. Cottagers' fowls may be said almost literally to keep themselves, the roads and streets providing no small supply of food, both vegetable and animal, and, to judge from the results, as healthy as it is varied.

One advantage arising from keeping laying hens in good condition is that when they cease laying they will, if not quite fat enough for killing, be very nearly so. Should a higher degree of fattening be necessary, they may be put up for a week or two, and fed with nutritive mashes and cooked food, of which Indian corn, oatmeal, milk, and whey will be found good fattening ingredients. For fat poultry there is always a large demand, but the greatest is for young and tender chickens, for which the cottager will obtain a high price—so high, indeed, that it will be worth his while to devote a little attention to this department. The chickens will be best and most quickly fattened by being kept in coops, all the sides of which should be sparred, the top only being solid. No bottom is required, as the coop is simply placed on a dry part of the ground, although it will pay to put down a pretty thick layer of good dry sharp sand. Failing this, dry soil may be substituted. On no account must the place on which the coops are put be damp.

By far the most economical food for chickens so kept to fatten is one made of either oatmeal, Indian

corn, meal, &c., mashed up with boiled potatoes and some green food, as cabbages or onion tops, or even a portion of the onion itself. The addition of these vegetables corrects the heating properties of the oatmeal, if that be used. Rice boiled soft, combined with other substances, is also good to make a mashed food with, whilst the water in which it has been boiled will form a most acceptable drink. A good deal of attention must be paid to the way in which the food is given to the chickens. What we have said in the first part of this chapter will be useful under this head.

CHAPTER IV.

RABBITS.

In the farmhouse rabbits are principally kept as pets of the younger branches of the family, as there is a strange feeling, amounting almost to a prejudice, against their being killed and used as food. Some of the young gentlemen, however, may, if they take a real interest in the pursuit, add considerably to their pocket-money by rearing and selling particular breeds or fancy rabbits, for which fancy prices are generally obtained. In the case of the cottager, to whose circumstances the rabbit is well adapted, its accommodation is easily provided for. Its food costs very little, as, although a voracious eater, it can and does thrive upon such a variety of vegetable stuff, that it is difficult to name anything which grows by the wayside, in the field, or in the garden which it will not partake of. Should there be youngsters in the cottage family, the gathering in of such stuff will naturally be their work, and will tend to foster habits of careful attention to the wants of the lower animals, and also to kindliness of disposition towards them. These are matters of great importance to the farmer, whose servants, in process of time, they will most likely become ; for a kind servant will be certain to be a valuable one, especially where live stock are

concerned. Most probably the cottager will confine his attention to the common or domestic rabbit, which is the kind generally used at table, and for which, when well fed, young, and tender, there is always a steady demand at good paying prices. He may, however, if he chooses to devote more time to the breeding of rabbits, take up the fancy kinds, which yield decidedly good profits, and which will go far to tide over the hard winter months, and enable him to meet any extra demand on his purse.

The Common Domestic Rabbit (Fig. 16).—Common domestic rabbits are of various colours—black, white, grey, fawn, mouse, &c. Their prices vary according to age, size, and beauty. In some parts of the country young rabbits may be purchased at from 6d. to 1s. each; a half-grown rabbit will fetch from 1s. 6d. to 2s. 6d.; but 5s. or 6s. is, in general, the utmost price given for a common full-grown buck or doe, the average being from 3s. 6d. to 4s.

Fig. 16.

One of the chief objects in keeping common rabbits is to furnish an occasional dish for the table; and therefore those by whom they are kept attend as particularly to the sort whose flesh is said to be the best as they do to their colour or shape. Short-legged stout rabbits are generally supposed to be the most healthy, and also the best breeders. The large hare-coloured variety is much esteemed by some people; but the white, or white mottled with black or yellow, are more delicate in flesh. The grey and some of the blacks

approach nearer to the flavour of the wild rabbit than any others.

Lop-eared or Fancy Rabbits (Fig. 17).—Formerly a fine rabbit of any two colours, however short its ears, was accounted a fancy animal; but it is very different now. In the eye of a fancier of the present day the long lopped ear is an indispensable requisite. The first things looked at are the length and fall of the ears; next the *dewlap*, if the animal be in its prime; then the colours and markings; and lastly, the shape and general appearance. Rabbits whose ears do not extend to 14 inches from tip to tip, measured across the skull, would be reluctantly admitted into a fancier's stock, though the ears fell ever so finely; or, in case they exceeded that length (and sometimes they are 16 inches, and even more), if they did not lop or fall downward in what is deemed a graceful and becoming manner. The dewlap, which is only seen to advantage in fancy rabbits after they have attained full growth, is the loose flesh that hangs from the jaws on either side, and extends down the neck. The annexed cut (Fig. 17) is a portrait of a first-rate fancy lop-eared rabbit, ten weeks old, with ears matching each other perfectly, and measuring 13 inches from tip to tip. The difference in the back and general appearance, to say nothing of the ears, between the fancy and the common rabbit cannot fail to strike any reader who will take the trouble of comparing the engravings.

Fig. 17.

Fancy rabbits fetch high prices compared with

those of the common ones; occasionally 5, 10, and even as much as 20 guineas has been given for a first-rate doe. Very good fancy rabbits may, however, be bought for much less sums than these. The foundation of a fancy stock, provided young rabbits only be bought, may be laid for £3 or £4, while a beginning may be made for even much less.

The Rabbit-house and Hutches.—The rabbit-house should be dry and well ventilated, as too much humidity, whether externally or internally, will cause the rabbits to rot. Where large numbers are kept, fresh air is absolutely necessary to preserve them in a state of health. Still they should not be exposed to draughts, which sometimes bring on a disagreeable and even fatal disease called the *snuffles*. The young fancier may himself construct hutches sufficiently adapted for common purposes. A tolerably good *doe's hutch* may be made out of an old egg-chest, and places for bucks and weaned rabbits of tea-chests, which may be bought of the grocer (see Fig. 18). If our reader become his own carpenter, we recommend him to follow the subjoined directions given for making hutches. For common rabbits, with which the young fancier will probably begin, hutches like that in Fig. 19

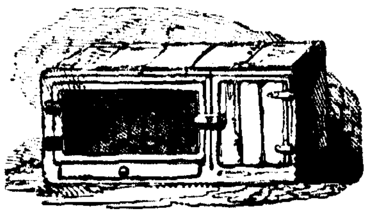

Fig. 18.

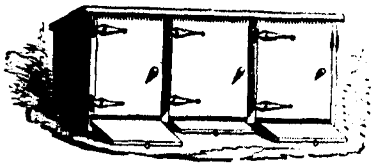

Fig. 19.

will suffice, but handsome rabbits should have handsome houses.

The hutch for does should have a partition with a hole in it, to let them pass from one part to the other, and a slide to close this hole when necessary (Fig. 20). For weaned rabbits a hutch without this partition is preferable, and it is unnecessary to make any partition in the bucks' hutches. The breeding hutches should be about 3 feet long, 2½ feet in depth, and 18 inches high; the breeding-place may be from 9 to 12 inches in breadth, and should have a door to fit the whole front of it, fastened by a separate latch or button to that used for the door of the feeding-place. The latter door should extend the whole distance from the partition to the opposite part of the hutch, and in depth from the top to within 2 or 3 inches of the bottom: it must be made of a frame of wood, tinned on the inside, with stout wire or slender iron rods nailed or driven into the top and bottom parts of the frame, from three-quarters to an inch apart. Hang it on a pair of small hinges to that side of the hutch which is opposite the partition, and fasten it by a latch or button. Under this door a drawer for food, well tinned round the edges, is to run in: it should be fastened by a button fixed to the lower part of the large door, or it may be so contrived that the door will keep it close without any fastening. Nail tin round the hole in the partition (which ought to be circular), and, in fact, to every other part of the interior of the hutch which the rabbits can

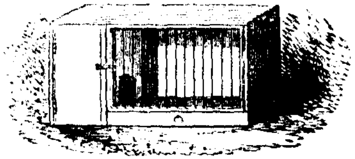

Fig. 20.

take hold of with their teeth, as they are very destructive animals, and would actually gnaw themselves out of a mere wooden hutch. The bottom must be planed quite smooth, with a little slant towards the back of the hutch to let the water run off.

The buck's hutch (Fig. 21) is made differently from the breeding hutches. Instead of being square, it is almost semicircular, the back and sides being gradually rounded off from the front. The wires are placed wider apart, and are thicker and stronger than those used for does' hutches; it has no partition, and, as there is never more than one rabbit at a time to feed out of it, the drawer, instead of running the whole breadth of the cage, is placed in the centre, to a cross piece which goes from side to side, like the front piece of the drawer in other hutches. There must be an aperture at the back, close to the floor, for the escape of the water; and the door, which, excepting the drawer, constitutes the entire front of the cage, should be well hinged and fastened with a stout button. The buck's hutch should not be less than 20 inches high, 2 feet broad, and 20 inches at its deepest part.

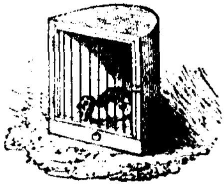

Fig. 21.

The flavour of the meat yielded by the ordinary run of the common rabbit may be much improved and assimilated to that of the wild rabbit, which of course is the most esteemed, by paying attention to their food and modes of feeding, respecting which a hint or two may be derived from observing the stuff generally eaten by the wild rabbit.

It is essential that the rabbit-*house* in which the

hutches are kept should be perfectly dry, as damp is exceedingly prejudicial to the health of the animal; and fresh air should be also supplied by proper ventilating openings at the lower part, while others are made in the roof for the egress of foul air. Where the cash can be spared, we strongly recommend the floor to be made of Portland cement concrete, in which gutters, in any position and of any size and shape desired, may be made with great ease. The buck, or male rabbit, is at certain times to be kept separate from the doe and young rabbits; for he is a savage cannibal, if the term may be used, or rather the Saturn of domestic animals, as he will readily devour his young offspring. There are various forms of hutches more or less complicated, according to the fancy or prejudice of the breeder; but those we have described are the most simple, and, if well made, will give satisfaction. In designing hutches, &c., the breeder should err rather in an excess of dimensions than the reverse. It is pitiable to see the way in which some rabbits are cramped up in dark, ill-ventilated boxes. The rabbit-house should also be well lighted, in addition to the other constructive points enumerated.

We now turn to a brief description of the feeding and fattening of rabbits. We have already said that rabbits are voracious eaters, and, as this fact is sometimes stated without any qualification, cottagers are afraid of having anything to do with the animals, on account of the difficulty of procuring food. This fear, however, need not be entertained, as, although heavy feeders, they eat all sorts of green stuff, a large proportion of which can be got for the mere trouble of gathering it from the roadside and fields. The very weeds which infest the garden, especially dandelion

and groundsel, are tit-bits to the rabbit; while tops of carrots, the stalks, leaves, and pods of peas and beans, kidney beans, scarlet runners, and nearly everything that is green, are welcomed in the rabbit-house. For winter food many of these materials, such as pea haulms, grass from the hedges, &c., may be dried and made into a species of hay. Leaves of fruit trees, with the dried twigs—the younger, of course, these are, the better—together with such weeds and plants as remain green during the winter, as docks, &c., will yield a supply of dry and green fodder. Carrots, turnips, parsnips, Jerusalem artichokes, &c., should likewise be given at this season, to make up for any deficiencies in green food which may arise. As with other animals, an important point in feeding is to keep changing the food, precaution, however, being taken to introduce these changes as gradually as circumstances will permit. While green stuff may be called the natural food of rabbits, the conditions involved in their domestication necessitate certain additions, in order to overcome the tendency of green food, when given alone, to cause irregularities in the bowels, scouring, &c., which, if allowed to go on, cause great loss. To prevent this, it is only necessary to add occasionally some solid and dry ingredients, as grain of different kinds, malt, cumin, bran, sharps or pollards, and dry fodder, such as hay, dried leaves, &c. While some rabbit-keepers permit the animals to take as much food as they like, the majority deem it essential that they should have stated times of feeding, and certain supplies only. As regards the time of feeding, it is better to furnish them with a comparatively limited supply three or four times a day than only at morning and evening, when a larger amount will be required, and which

will not be so good for the animals. We should say that the rule ought to be frequent feeding and small supplies. The nearer, in fact, any artificial system of feeding closely confined animals approximates to the natural one the better. In the farmhouse this close confinement may be obviated by having a small grass run attached to the rabbit-house. This should be divided, if possible by means of galvanized wire netting, into compartments, so that the different stocks may be kept separate when required. Hurdles, however, will be better, as they can be taken up, and the whole thrown into one, if desired. These grass runs will greatly tend to keep the rabbits in good health and condition, and enable them to assimilate their food more rapidly and completely. The doe requires to be kept better than the buck, especially at breeding-times, as there is a larger demand upon her system at these periods. Many a good stock has been utterly ruined, or thrown into such a low condition that they could not possibly pay, simply through want of attention, especially in the case of the does, which may be said sometimes to be literally starved. As for young rabbits, the essential point is to keep them in a constant state of progressive improvement, never allowing them to fall off or go back: this is the only way to secure a good stock which will readily fatten at the lowest cost. The age at which rabbits are best for the table is when they are from three to six or seven months old, and if the advice given in the previous sentence is followed, they will be in such condition that the final fattening may be accomplished in three weeks, or even less. When the time for this arrives, the ration system should be discontinued, and the rabbits allowed to eat as much as they like. The

food should of course be more nutritious than that previously given; as, for example, in addition to the green food, carrots or parsnips, and oats. Some fatten with grain alone, but this tends to make the flesh hard, and much less juicy than when the above mixture is given. Peas are very nutritious, and may be added in moderate quantity at the fattening time, which may be shortened by cutting or mashing the food occasionally, that it may be more easily assimilated.

Independently of the fact that there is always a ready sale for rabbits, especially where a large manufacturing town is near, another advantage to be derived by the cottager from keeping them is the amount of manure which they yield. Considering their small size, this supply at first sight might be considered as beneath notice; but where even a moderate number of animals are kept the cottager will be agreeably surprised at the great weight of excellent manure which he will obtain, either for his garden or for sale, the price which it realises being high. Nor should it be forgotten, as bearing upon the economy with which these animals may be kept, that nearly the whole of the work may be done by the young people of the house—a by no means trifling consideration to the cottager, and one which ought to have its full weight in determining him to keep a few, at least, as a trial.

CHAPTER V.

THE PIGEON.

It has been cynically said that the pigeon is only kept on farms because it maintains itself—at least, to a large extent—by "poaching on other people's preserves," as it can and does fly at will to fields, alike indifferent as to whether they belong to its master or his neighbour. But as honesty is honesty, and knows no exceptions, we do not suppose that our readers are among those who would keep these interesting, beautiful, and graceful creatures from such a motive as this.

Ornaments to the house, and favourites with every one, they are worthy of being kept for their own sakes, and, we may add, for those of the children, with whom they are always pets. And there is no doubt that they may be so kept that, if not a source of great profit by market sale, they will furnish many a good dish or pie for the table. From our own experience, however, we believe that, if provided with a good house, and looked after as to cleanliness, food, and condition, they will repay the cost they may incur, especially in the case of a regular poultry-keeper who can devote the necessary time to them. They should be well and regularly fed, which keeps them near home, and consequently from not flying abroad so frequently or so

far, which is great exertion; they fatten more quickly, and attend better to their young. The house should be airy, yet warm, and well sheltered from the east and north winds; the opening, therefore, should be on the opposite quartering of the house to those points. Two nests must be provided for each pair. The nests should be close to one another, but separated by a partition, in order that one may be used for sitting, while the other is occupied by young ones, which would very likely disturb the sitting pigeon. Another reason for this separation is that pigeons, although they appear to be gentle creatures, are, in reality, very quarrelsome, and require but little provocation from their neighbours to plunge into a "free fight," in which both eggs and young are too often destroyed. The breed best fitted for the farm and cottage, for table purposes as well as for sale, is the common one known as runts, fancy breeds coming under quite another category. In some instances, however, as in the case of rabbits, the cottager might find it to his interest to breed and rear some of the classes for which there is the greatest demand, and which fetch the highest prices. Where a variety of breeds is desired, tumblers are recommended for the amusement which their odd gambols in the air afford; nuns, archangels, and owls for amusement and gracefulness combined; whilst runts are to be chosen when profit only is the object. The latter birds not only breed very rapidly, but as speedily make flesh, which is also of a fine flavour. The worst of them is that they are such bad nurses that they require close watching, or their young may die of neglect or cold. As regards the house, an attic makes a capital one, if care be taken to have it well ventilated, and at the same time so situated that it is warm and

snug, and not exposed to cold winds in winter-time. If a small flock only be kept, and the floor space be large enough, some prefer to have the nests arranged along its sides. In this case the nests are of earthenware, shallow, but with round bottoms. This form is very good, for by it the eggs are kept together, and cannot get separated or roll off, as they do sometimes when the nest is flat. To provide for a larger number the pigeon-house will require to have shelving at its sides, divided into compartments, on which the earthenware nests may be placed; or, if the nests are formed simply on the shelves, a small ledge must be made in the front of each compartment to prevent the eggs from rolling out. The nest is a very simple affair, being generally made of a few sticks placed crosswise. Sometimes pigeons dispense with a nest altogether, laying their eggs on the bare shelves or floor; hence the value of the rounded earthenware dishes. When the pigeon-house is made outside, it may be constructed with a barrel divided into compartments, which will be more convenient if swung with cords and pulleys so as to slide up and down a central pole. Or the house may be of the form known as the dovecote, which resembles a dog-kennel with sloping roof (Fig. 22). In providing the stock, young birds, not exceeding six weeks old, should only be bought, as at that age their strength of wing will not allow them to fly away, which old ones are sure to do. By this simple precaution, the loss of birds, which pigeon-keepers so often have to deplore at the outset, may be avoided.

The pigeon begins to breed when about six months old, and the young are hatched on the seventeenth day after the second of the two eggs which the female produces is laid, the first egg being laid the day

before the second. The number of hatches in the course of the year will vary according to circumstances, health of the birds, and so on; but the keeper may rest satisfied if seven are obtained. The best food for pigeons, and that which is commonly used, is grey peas; but to these may be added grain, such as wheat, barley, and oats, a variety being as valuable for them as for other stock; but they will pick up no small amount from the fields. We, of course, here presume that they are allowed liberty, and not boxed up in some miserably small-sized cage or stuffy attic—a condition of existence quite incompatible with health and profit. Care should be taken that the food is new. Old grain, which is almost certain to contain more or less mites or maggots, should never be given to them; and these, if taken alive by the birds, will infallibly do them an injury. If old grain be used, the best way to get rid of mites is to heat the grain in an oven for a short time. When old birds, or those which are strong enough to fly, are purchased as part of the stock, it is a good plan to sprinkle or spread some scent or odorous substance in the pigeon-house, as they are so fond of odoriferous smells that they will most likely be induced to remain instead of flying away. The floor of the pigeon-house should be either wholly or partially strewed over with gravel and old mortar, pounded or broken into small pieces; and, in addition to these essentials, salt should be provided, or, as some prefer, a mixture of salt and saltpetre. Others, again, have the salt made up into a still more elaborate mixture with gravel, dry soil, and pounded mortar, making in all about a gallon in quantity; to these are added half a pound each of hemp, mustard, and caraway, and about three ounces of bay salt. These are all mixed,

and formed into a paste with salt brine, which, when dried and placed in a vessel in the pigeon-house, affords the pigeons healthy employment in pecking at it.

To induce the pigeons occasionally to visit the garden walk or lawn in front of the farmhouse drawing-room windows, or the one window of the humbler cottage, a handful or two of peas or grain should be thrown down there. The gambols of the graceful creatures, to say nothing about free fights and little quarrels, will afford an endless source of amusement to the young folks, if not, indeed, the older ones. Nothing can be more beautiful, when the flock is numerous, than the mixing together of the birds, producing a glorious glint of changing colours. We have little more to add except that, amongst the things to be put in the house, dishes provided with clean water must not be overlooked. These are essential not merely for drinking, but for bathing purposes, the latter being necessitated by the vermin with which the birds are infested, and which the water bath helps them to get rid of. It is also a good plan to have the pigeon-house frequently lime-washed; in fact, every attention should be paid to cleanliness. The dung should not be allowed to accumulate, one of the most powerful inducements to prevent this being its high value as a manure, which would be greatly lessened by allowing it to lie long.

The following notes and illustrations, in addition to those already given, may be found useful:—

The Dovecote, or Pigeon-house (Fig. 22).—The form of the box is immaterial; the triangular is perhaps the best, because it allows the wet to run off quickly. It may be made with any number of holes, which should be sufficiently large for the pigeons to turn round in them with ease. Shelves and partitions six or eight inches deep should run along the front, to keep the

couples apart, and also to afford them good resting-places. It will be an advantage if you can allow two holes between each partition for every couple of birds. The box should be fixed where it will be secure from rats and cats, and ought always to face a warm quarter.

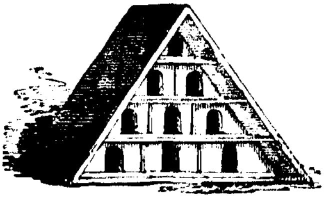

Fig. 22.

Pigeon Lofts.—Many persons convert the spaces between the garrets and in the roofs of their houses into lofts, by making an aperture in the tiling which opens on a platform, fixed on the outside. It is necessary in this, as in all other cases, to erect proper fences to keep out the cats. For the sake of warmth, the loft should, if possible, face the south or south-west; but any place that is dry, light, airy, and sufficiently commodious may be converted into a good loft, as already illustrated in the chapter on the goat.

The *bolting-wire* (Fig. 23) is a very useful addition to the loft or aerie, or single trap. Its construction is very simple. A little square, or rather oblong, wooden frame is made sufficiently large for any pigeon to pass through it with ease; a slip of wood nearly as long as one end of the frame is then hung to it by a couple of pairs of wire staples or small hinges, so as to play easily; into this slip two pieces of wire are driven, wide enough apart to admit a pigeon's

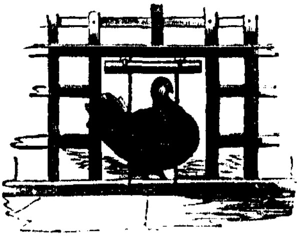

Fig. 23.

head and neck, but not the body, between and on each side of them: the wires must be long enough to reach below the edge of that end of the frame opposite to where the slip in which the wires are driven is hung. The bolting-wire is now complete. A lath or two must be cut out of one side of the aerie, or a hole made in the roof, or near the entrance to the loft, according to which of the places is destined for its reception. The frame is fastened in with the points of the wires downward, and so as to open inward; the lower part of the frame against which they fall will then prevent them from moving outward. The object of the bolting-wire is to afford a pigeon the means of getting into the trap, or loft, after it is fastened up. For instance, suppose a person who keeps tumblers turns them out for an hour's flight; at the end of that time he calls in all he can, fastens up the entrance, and quits the loft, leaving two or three birds out; the construction of the bolting-wire is such that the birds in the loft cannot push it outward, while those which are out can and will, when they wish to come in, push it inward, lift it up, and enter. It is equally useful in the aerie; after two-thirds of the pigeons are inside the trap, the doors are pulled up, and the stragglers afterwards get in by lifting the bolting-wire. The birds already trapped cannot escape through it, while it affords an easy entrance to the few that are not secured when the doors are closed. The pigeon-call is a long, shrill, and loud whistle, to which pigeons will attend, even when high on the wing, if you make a practice of giving them some choice food after it. It is by this call that the pigeons are enticed into the house or trap; they should be regularly accustomed to it, and invariably brought in by it before they are fed.

CHAPTER VI.

THE DOG.

We have now reached the last, but not the least in point of interest, of the chapters in this division devoted to the consideration of the domestic animals of the farmhouse and cottage. So interesting is this subject, and such a general favourite is the dog, that a treatise might easily be written on the various points connected with him. The reader will then readily perceive how difficult it is to give even the briefest of notes in a concluding chapter. Not only is the dog highly esteemed as a companion and friend—for such he often really is—but his services, considered from a useful point of view, are invaluable on the farm—for example, as a sheep-dog or a watch-dog. Then, again, there is what may be called, *par excellence*, the house-dog, or pet, which is generally the object of the loving care of the ladies of the house, and of which there are many varieties, from the terrier to the poodle. Where there is so much to be said, and so small an amount of space in which to say it, it is not easy to know where to begin; and we shall, therefore, glance only at a few of the leading points, some of which are often neglected or overlooked.

And first as to feeding. The food of the domestic dog may be said, as a general rule, to be much the

same as that of the family, being made up of scraps of meat, and what every dog specially delights in—bones. When a dish is purposely made for him, it is almost invariably thick oatmeal porridge, with which scraps of meat are frequently mixed. When a dog has the run of the house, it is a great mistake to give him too much food, and that too frequently. At every meal at which he is present—and he is too knowing to be absent—some one or other of the family is sure to give him a piece of this or that, so that he is being constantly feasted. Very quickly learning to look on these tit-bits as his lawful perquisites, he becomes a nuisance, especially to strangers. Apart, therefore, from other considerations, this system is one which should not have a place in a well-regulated family. Not that we should begrudge any dog-lover—and we belong to the *craft*—the pleasure of giving him a favourite morsel, but it should be done at a proper time; at least, he should be taught not to importune his master or mistress for it, but to await their pleasure; and no animal so readily learns a lesson as the dog. But these tit-bits at meal-times are better withheld altogether, and the dog should be made to learn from early puppyhood to expect only his regular meals, and to look upon anything extra as a treat, dependent entirely on the will of his master or mistress, and if withheld, not to show his disappointment in one or other of the many odd ways in which a dog can testify it. Far less should he be permitted to demand, so to speak, the treat he wishes for in such a way as to become a nuisance. This may seem a trifling matter, but it is one which exercises no small influence on the value of the dog, both in training and in health. But bad as this system is for the health of the dog, it is infinitely

worse when he is fed on a multiplicity of dishes prepared expressly for him.

This plan is chiefly carried out with dogs which have the run of the house, or which may be considered as favourites or pets. When its results are taken into consideration it is obvious that the kindness which dictates it is a mistaken one. Those results are generally very painful to the animals themselves, and not less so to those with whom they are such favourites. In fact, a pampered dog is never healthy; he is always ailing in some way or another; and the course of physicking to which, as a consequence, he is often subjected, tends still further to make his existence a burden. The more closely the natural way in which a dog feeds himself, if allowed proper liberty, is adhered to, the more healthy will he be. Besides, what he finds for himself he will enjoy all the more, and indulgence in this point is greatly conducive to health. But some will say, "Oh! he gets hold of such nasty things that they cannot possibly be good for him." Such persons, however, should consider that in choosing these substances the dog only follows the natural bent of his inclination, which tells him that they are good for him; and one may as well try to prevent the dog from eating grass, which he takes as medicine, on the ground that we ourselves do not like or eat it, as to prevent him from taking a bone in such a "high" condition as to fill us with disgust.

When prepared food is given him it should be of as simple a character as possible, and the more he is confined, whether as a companion in the house or tied up as a watch-dog, the simpler should his food be. This does not preclude change or variety, which is beneficial rather than otherwise; it simply excludes

all gross, heavy, and repeated feeding, especially with materials from the table, such as fine bread, and the endless variety of sweet things with which we too often pamper our own appetites. All these should be avoided, if we have any regard for the health of the animal we profess to like so much. Having thus stated the kind of food the dog ought not to have, we now come to the consideration of that which he should have. The change or variety above alluded to obviously includes a number of feeding substances. These, as already remarked, should be of a simple character, and if meat be given, it should be coarse in quality. Inside meat, or the pluck, as it is called, is good, but only for occasional feeding. Liver is a special favourite with both cats and dogs, and having a laxative tendency, it should be given when the bowels of the dog are constipated; but it should not be given regularly, as is sometimes done. Tripe also is good for dogs, and the coarse parts of meat, such as the skin, form a very economical and capital dish when boiled, while the soup or broth will be excellent with the addition of boiled rice or oatmeal. Cooked meat should in all cases be allowed to cool before it is given to the dog, for hot or even warmish food acts prejudicially on the digestive organs. So also does raw meat, although some think it best when given in this way, because they say it is the natural one, as dogs at liberty never find cooked meat. This, however, does not follow. Whatever meat is given—coarse and lean qualities, be it remembered, being always chosen—it is scarcely necessary to say that it should be in good condition, sound, and sweet. Some are exceedingly careless on this point, giving the animals meat which is known to have been procured from diseased beasts.

Another essential point to be attended to is to have every dish or vessel perfectly clean, whether used for cooking or for containing the food. It is pitiful, and indeed disgraceful, to see the way in which some keep the food-vessels of their dogs, the same ones being often employed for weeks, until they get into the filthiest state. Dirt of any kind, especially of a decayed character, in feeding vessels cannot but exercise a bad influence on the dog. Of course the same attention should be paid to the water vessel, and also to the water given, which should be clean and of good quality. Some advocate the use of soft, others of hard water; but the point is difficult to decide. Many authorities on dog treatment maintain, however, that the food should not be given in dishes at all, but simply thrown down on the ground, because he likes it better than taking it from a dish, while any soil he may happen to take up has a beneficial rather than a prejudicial effect on his bowels. This system would appear, after all, to be the natural one; for if the habits of the dog be observed, it will be found that, if his meat be served on a plate, he almost invariably conveys it to the floor or ground before eating it. One word as to bones as forming part of the food of the dog. Hard bones with little or no meat on them are said to be better for his health than soft ones with much meat attached to them, the use which bones are stated to serve being not for food purposes, but to afford a beneficial action to the teeth. This may be true enough as regards young or middle-aged dogs with a good set of strong teeth; but in the case of old animals, or those having bad teeth, the gnawing of hard bones is likely to result in the loss of one or more of them, and it is a pity to deprive an old animal

of the means of eating his food comfortably. No doubt, where soft bones are given, such as rib and chicken bones, there is a danger of the parts which the animal breaks off sticking in his throat. Some writers also apprehend the further danger of their causing derangement of the system. This, however, need scarcely be feared where the digestion is even only moderately strong, and the dog has great natural digestive powers.

Our remarks as to the best kinds of food for the dog refer chiefly to those given when the animal is in health: when unwell a different course will be necessary. But as we have not gone into the treatment of the diseases and complaints of other animals of the farmhouse and cottage, we can only touch this portion of the subject lightly, simply stating that on the first symptom of the animal being "out of sorts," as it is called, attention should be given to him, and if the illness continues it will be necessary to bestow a great deal of nursing, dogs as a rule being difficult subjects to deal with in their ailments. Further, as in the case of nearly every other domestic animal, if the dog's bowels are kept in proper order, other points, of course, being at the same time attended to, his health will generally be secured. The best and safest medicine we know is a mixture of sulphur, nitre, and ginger. Sulphur alone is so invaluable for dogs, that we would recommend it to be given in small doses, at intervals of two or three weeks. Where its use is begun from puppyhood, immediately after weaning, in conjunction with avoidance of over-feeding, &c., we could almost say with certainty that no dog will have the distemper, or indeed even an approach to its symptoms. The keeper of the largest number of dogs we have known, and whose experience extended over a period of very

many years, informed us that he never had a case of distemper amongst his dogs when he began the early use of sulphur, and continued it in the way above named.

As regards the times of feeding, it seems to be generally believed that one meal a day is the best for health. But when one considers the very long period over which the dog's enforced fasting thereby extends, and his extraordinary appetite when in good health, this rule appears to involve somewhat of a punishment to the poor animal, and we certainly are tempted to break through it in so far as giving him at least a partial meal in the evening to keep him quiet through the long hours of the night. It can scarcely be good for any animal to be in a state of chronic irritation or weariness during so much of his life. But if the rule be followed, one thing certainly should be done, and that is to furnish the meal to the minute, and an abundance of it. All animals very rapidly learn to know feeding-time, and the dog, possessing as he does higher instincts than any of the other domestic animals we have been considering, will not be behindhand in this, and it would be unkind to keep him waiting after his twenty-four hours' abstinence.

A point upon which there is considerable diversity of opinion is the washing of the dog. That cleanliness of the skin is conducive to the health of all animals we have already shown; but it is very doubtful, to say the least, whether washing is the best way to secure this. Indeed, we are strongly of opinion that it is a bad thing to wash dogs at all, however healthy the practice may be thought by some, as well as adding to the fine silky appearance of the coat. So far, however, from the latter being the case, our experience,

combined with that of many others, is that it has a tendency to make it rough. That it renders the animal uncomfortable, any one may ascertain beyond doubt by observing his proceedings after the bath. The first thing he does, if at liberty, is to run off to a dusty road—or, failing that, a dust or dirt heap—and roll himself therein. This is a natural instinct, for at the roots of the hair there is a kind of oily exudation which keeps the hair soft and smooth, which the animal endeavours in this way to restore. If the dog is well fed and otherwise properly attended to, the coat will not require washing, or, indeed, anything being done to it save an occasional combing and brushing, which he thoroughly enjoys, but which cannot be said of washing, for, as a rule, he detests it. The combing and brushing should be thoroughly but gently done. If, however, washing be considered necessary, he should be rubbed till he is completely dry, otherwise a severe cold will probably be the result; and this rubbing will be found no easy matter with the majority of dogs. Cold, or, in severe weather, tepid or slightly warm water should be used, and in no case ordinary soap, which is a disagreeable irritant to the skin of the animal. This does not apply to what are called "dog soaps," some of which are very good.

CHAPTER VII.

BEES.

In treating of the "stock," so called, which engages the attention of those connected with the farmhouse and the cottage, we have gradually descended from the largest to the tiniest objects which demand the care of their inmates, and from which they hope to gain both pleasure and profit. But tiny as are the insects on whose management we are about to treat, they are not the least remunerative. Indeed, it is questionable whether any department of the farmhouse or cottage economics yields so large a profit, in proportion to the cost, time, and labour devoted to it, as does the apiary. Bees may be said to be the cottager's gold mine—a mine, moreover, worked with little labour and much profit and pleasure.

It is therefore a matter of surprise, to those who know what bee-keeping is, that it is not more generally practised by our cottagers. That it pays, and pays handsomely, considering the small amount of labour and attention required, is the testimony of all competent authorities, while as a delightful amusement it stands second to none. Of course, like all other departments, bee-keeping has its bad and its good years; but the average yearly value of the produce per hive is generally put at 20s., an estimate which we think far

too low; indeed, it more frequently approaches nearly double this amount. Much, of course, will depend upon the neighbourhood in which the cottage is situated. If within reasonable distance of a large manufacturing town, the highest price will be obtained for the honey, of which, on an average, each hive will produce 20 lbs. per year. To this must be added the value of the swarm, for the labourer must not tolerate the wanton killing of a single bee, let alone hives of bees; but of this more hereafter.

An excellent writer on the subject has described a system which may be carried out by the cottager on first starting bee-keeping, and its probable profits. He supposes the labourer to have procured, as a commencement, a swarm from some acquaintance. This will constitute the only outlay worth naming; for, if he be at all handy, he will make future hives, &c., as the bees increase. Starting in October of one year, at the same month of the following year the produce will most likely be about 20 lbs. of honey, worth at the very least 40s.; the following October should find his stock of bees so increased that he has four hives, and at least £4 worth of honey; while by the fourth October he should be the possessor of, say, ten hives, worth as many sovereigns or £1 notes. This statement, satisfactory as it ought to be to any cottager—for it might be said to be to him neither more nor less than "found money"—is, we believe, below what would really be the case. Every article of household consumption has increased, and is yearly increasing in value, while luxuries more and more find their way into families which at one time never dreamed of having them. Honey is no exception to this rule, so that the above estimate may be nearly, if not quite doubled; and, if

near a town doing a good trade, it may safely be trebled. This for four years' amusement—and after awhile the labourer will find, as a famous bee-keeper once remarked to us, that the bees almost wholly "take care of themselves"—is equivalent, taking the doubled estimate, to giving the labourer an extra income of £5 a year. And surely this is worth having, when the getting of it involves no hard labour, although close attention now and then is certainly required.

Another bee-keeper, starting in April with a single hive, for which he paid 20s. complete, in the May following had a new swarm, for which he himself made a rough box-hive. In July he had another new swarm, for which his ready hands contrived a second box-hive. Towards the end of August his May swarm produced a fresh one, which was also hived, while from his originally bought hive a new swarm was about the same time established: thus he found himself the possessor of five hives, the total cost of which was about 36s. In October he sold two hives for 25s., and in November another at the same price. As he had to remove from his house, he took up the remaining two, selling 25 lbs. of best-quality honey at 1s. per lb., 30 lbs. of a second quality at about 9d., and after giving away 20 lbs., took with him to his new home 20 lbs. of the choicest quality. This, valued at 1s. per lb., yielded for the five hives, in nine months' time, a profit of nearly £7. While the produce of this example, and the increase of the bees, may by some be considered exceptional, the prices obtained were assuredly equally so for lowness.

We think we have said enough to prove that bee-keeping is worth the notice of our cottagers, not merely as a source of income easily obtained, but as ministering

highly to the enjoyment of the home. Nor is it less worthy of note that it fosters a love of gardening, for a judicious and prudent bee-keeper should have some space allotted to the growing of flowers, which bees love. But the advantages do not end here; for, by devoting a small plot to the growth of buckwheat, for example, of the flowers of which bees are passionately fond, his family may obtain many a dish of thick porridge or very delicious puddings from its seed. Of the flowers grown for bee food the winter aconite comes first, and, being of low growth, it may be planted under the high bushes as well as about and near them. Crocuses, while adding to the beauty of the garden, are highly prized by bees; and later on mignonnette and other common but fine flowers, such as carnations, sweet-peas, scarlet runners, and kidney beans, all cheaply and easily grown, are no less coveted by them, and will waft many a pleasant gale of sweetest odour to the rooms of the cottage. This plan of securing home supplies of flower food for bees in districts where those naturally grown—as, for instance, white clover and heather—are not easily got at, is a point worthy of consideration to cottage bee-keepers; for these flowers may be said to be as good to the over-industrious bees as money, as they are in reality to their keepers, and the time lost in going to and returning from a distance tells materially, even where the bees are numbered by thousands, on their productive powers. To say nothing of the loss by death, &c., many bees are unable to return to their hives from the distant flower-beds in which they have found no small amount of their food.

We cannot, of course, be expected to enter into anything like a detailed system of bee-keeping, but numerous works, giving full and trustworthy instruc-

tions, are to be had for a mere trifle—some well adapted for circulation; and if any of our better class of readers, by giving cottagers a copy, induce but one or two to take to bee-keeping, they will be doing a greater act of charity than giving them a tract. Not that we object to tract-giving, if it be of the right sort, but we would say, give useful tracts as well as religious ones. The cottager who is industrious, and tries hard to raise his family well, is the one most likely to give heed to sound religious counsel. The Bee-Keepers' Association will also be glad to afford every help to cottagers about to commence bee-keeping, for the increase of the system amongst this class of the community is one of its leading objects.

There is no end, as the saying is, to the kinds of hives used, but the labourer need not trouble himself about what a bee-keeper called the fal-da-lal or fancy kinds; the plain old-fashioned wood or straw form will answer all his purposes. The hives, along with all other appliances, should, however, be made and kept in the best way, as carefulness is an important element of success in bee-keeping. The bench or benches for supporting the hives must be placed in a sheltered part of the garden, and covered with a slightly pent roof. Bees are much injured by extremes of heat and cold, a moderate degree of warmth being best for them; but the time when the highest warmth is required is the spring or hatching-time of the young broods.

Bees, being "thirsty souls," require to be provided with water, which should be put in a flat shallow dish, with a thin board floating on the surface of the water. This board being pierced with holes, sufficient water accumulates on the surface to permit the bees to drink

safely, and as quickly as they desire, without having to search for it; for honey bees are great economists of time. The feeding of bees, in the case of light hives and weak insects, is often necessary, especially in late and severe autumns and winters. Light hives are easily ascertained, if care has been taken to weigh the hives, which should be done on the 1st of October, 20 lbs. of honey being the average amount required by the bees to support themselves until the succeeding supply of natural flower food comes in. All above this weight the bee-keeper may appropriate for home use or sale, while all below must be devoted to the bees. The best food to supplement deficient weight is, of course, honey in the comb, the filled combs being placed in the hives, for which space may be obtained by taking out the unfilled combs; or, if the hive be a common box one, the honey may be placed in a cap or cape at the top of the hive, by gently knocking on which the bees will run up to the cape, and partake of the food. To prevent other bees scenting the honey and robbing the legitimate hive—for bees, like men, lose much of their high moral character under temptation, such as being made to live on "short commons"—the feeding-cap may be covered with a piece of old carpet. This extra feeding must only be given in the month of October, the bees being left to themselves from November till the following spring. Little more is required than to see that their hives are kept dry, and free from the intrusion of marauding vermin.

The stock of bees is increased by what is known as "swarming." As the population of each hive becomes too numerous, straitened for room, and with defective ventilation, a migration is determined upon, in order to find new, convenient, and healthy quarters. Should a

clean hive or hives be placed on a bench, and provided with a small portion of honey-comb on the top, the "wise folks" will most likely take possession of it. The cottage bee-keeper must not practise "the old" method, unfortunately still so frequently carried out that it may also be called "the new," of smoking the bees to death by brimstone in order to get the honey. Bees are too precious to be killed off wholesale in this way. In almost all modern treatises on bee-keeping directions are given for getting the honey and starting the bees on a new life of industry, without killing, or even, in fact, injuring them, and to those we refer the reader. As space did not admit our entering into all the necessary details of bee-keeping, our object has been to offer a few remarks by way of inducing the cottager to devote some of his spare time to the carrying out of a system which would, as we have said, yield him both profit and pleasure—a combination not by any means invariably secured in this hard-working world of ours, in which we "toil and moil" with but too little profit and pleasure, save that derived from the sense of doing our duty to our families and ourselves, and to Him whose goodness "clothes the year with fatness."

The following notes and illustrations may be suggestively useful and interesting to some of our readers:—

"The hive bee belongs to what naturalists have denominated the perfect societies of insects. Each community of these insects consists of three orders of individuals, distinguished by their number, their organization, and the respective share they take in the common labour of the society. These are denominated severally the *queen* or sovereign, the males or *drones*,

and the *workers;* the latter consisting of two classes, called the *wax-makers* and the *nurses.* A hive which contains as many as 50,000 bees will have only one queen, and not above 2,000 males.

Fig. 24.

"The *queen,* who, as her title implies, is the acknowledged monarch of the hive, is distinguished from her subjects by conspicuous personal peculiarities. Her body, Fig. 24, is considerably longer than that of any of her subjects; she is distinguished by a more measured and majestic gait, by the comparative shortness of her wings, and the curvature of her sting. Her wings, which are strong and sinewy, are only half the length of her body, extending very little beyond the posterior limit of her thorax, while those of the drones, Fig. 25, and the workers, Fig. 26, cover the abdomen. Her legs are destitute of the brushes and baskets with which those of the workers are furnished. She has no occasion for these instruments of industry, since her exalted station exempts her from labour, all her wants being munificently provided for by her subjects. She is distinguished by her colour as much as by her form, the black of the dorsal part of her body being much brighter than that of the drones and workers, and the ventral parts and legs being of dark orange or copper-colour, the hue of the hinder being deeper than that of the other legs.

Fig. 25.

Fig. 26.

"The queen, who is the only lady of the hive, enjoys the privilege of being followed by many hundred suitors in the persons of the drones. At the early age

of two or three days she is marriageable, and it rarely happens that her royal decision is long postponed; and, indeed, if she were not favourably disposed for such an event, the anxiety of her numerous subjects would urge her to it, for in no human monarchy are the hopes of succession so anxiously cherished as in the Empire of the Hive."

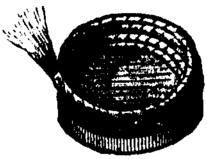

Fig. 27.

"Hives have been constructed of different materials, as straw, osiers, rushes, sedges, wood, and earthenware; and of still more various forms, some being bell-shaped or conical, some cylindrical, some square in their section, some with rectangular, and some with oblique tops, being internally divided by comb-frames fixed or movable, by shelves, and other expedients.

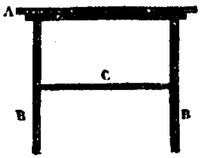

Fig. 28.

"Their forms of structure depend in some degree upon the object of the proprietors. When apiculture is prosecuted on a large scale for the produce of honey and wax as articles of trade, the foreign cultivators prefer hives of the most simple forms and most easy construction, and those from which the products can be obtained with most facility. The material preferred is, generally, straw or rushes. The process of making such a hive is indicated in Fig. 27.

Fig. 29.

"One of the movable comb-frames is shown in Fig. 28, where A is the vertical section of the stage,

shown by plan in Fig. 29; B the uprights, and C a shelf shown in vertical section.

"The English hive of Dewhurst, having a box at the top, is shown in Fig. 30; where A is the body of the

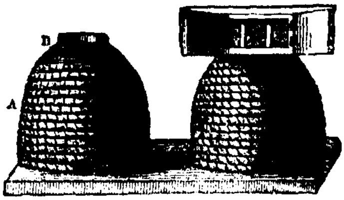

Fig. 30.

hive, B the opening at the top, and C the box provided with shutters."

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